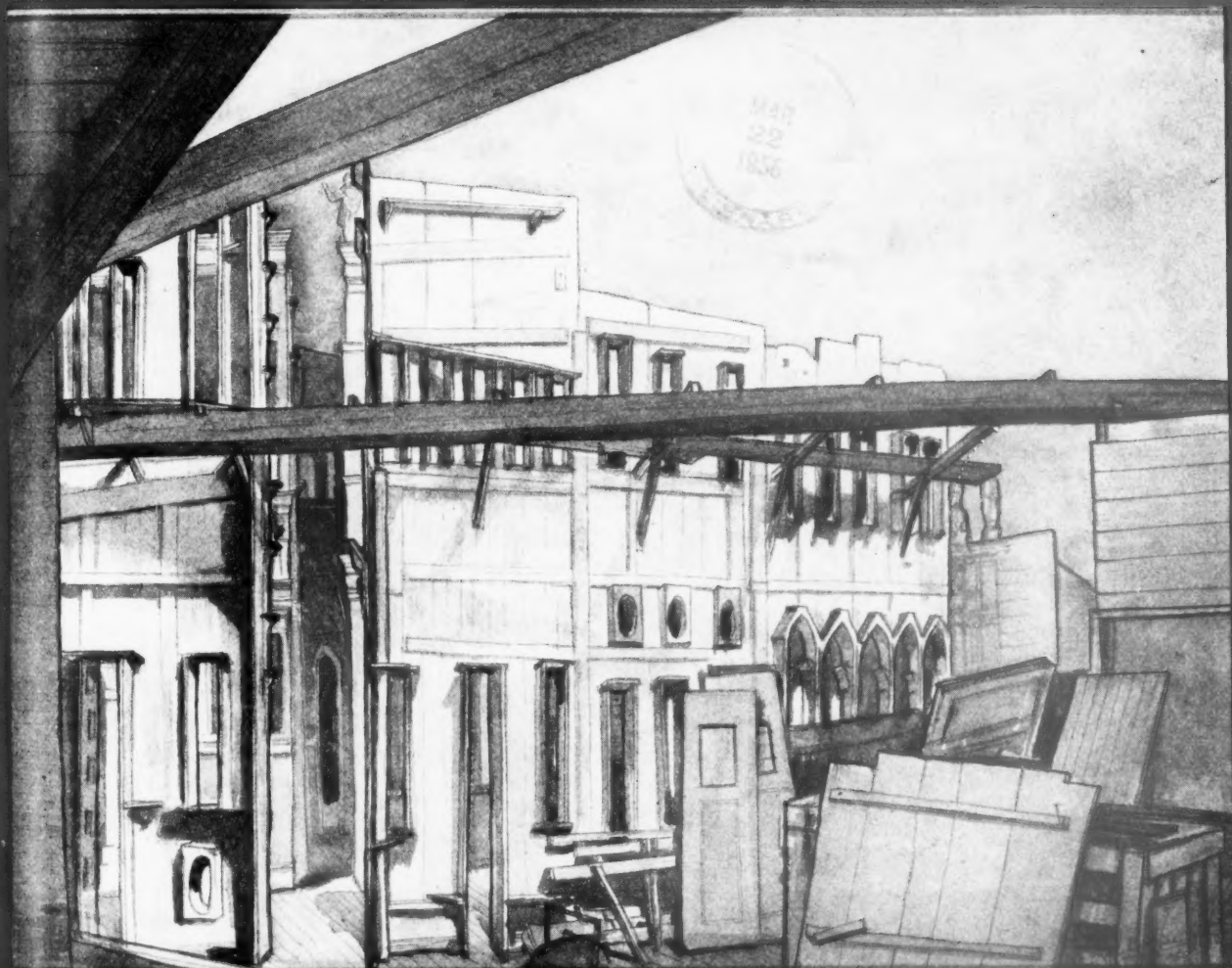


THIRD SERIES VOL 63 NUMBER 4

FEBRUARY 1956

THE JOURNAL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS

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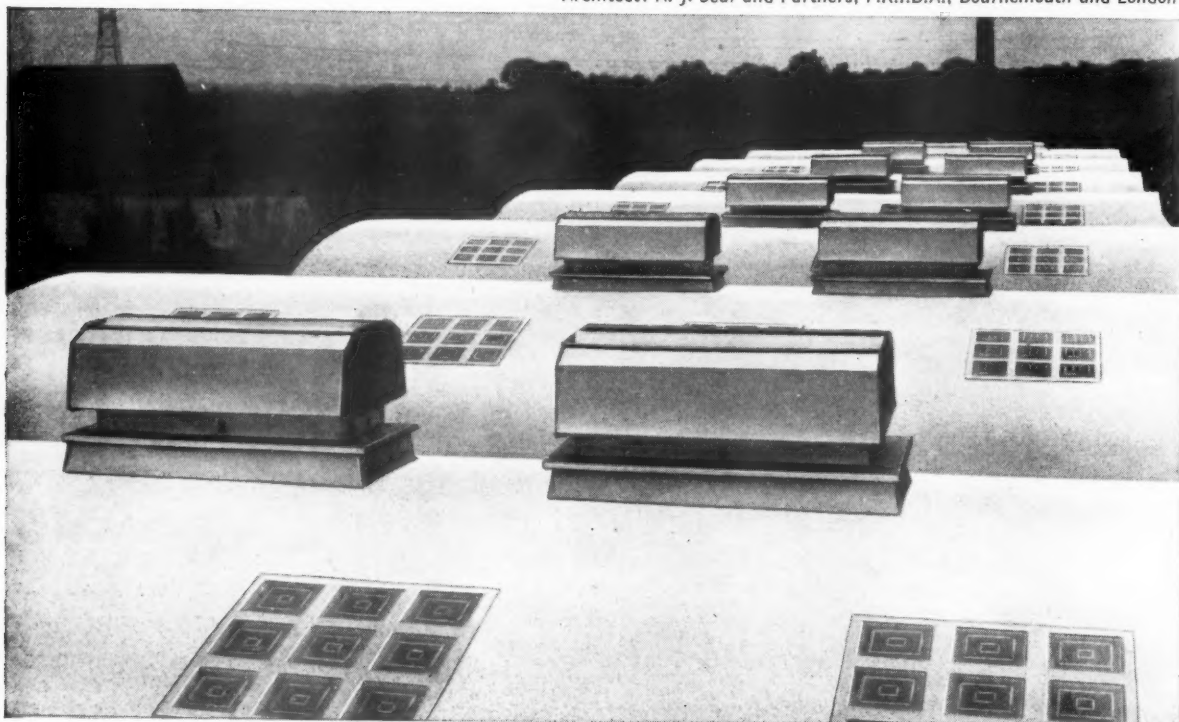


The back of the permanent scenery of the Teatro Olimpico, Vicenza. From a drawing by Richard Leacroft [A]

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TWO SHILLINGS AND SIXPENCE
TELEGRAMS: RIBAZO WESDO LONDON

FEBRUARY 1956

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The Annual Dinner 1956

The Royal Institute's Annual Dinner is to be held at Guildhall on 6 April. A form of application for tickets is enclosed in this JOURNAL. Tickets are £3 10s. each inclusive of wines, cigars, etc. Evening dress with orders and decorations or uniform will be worn. Early application for tickets is advisable.

Guildhall was recently reopened after war damage repair under the direction of Sir Giles Gilbert Scott, O.M., R.A.

Afternoon and Evening Symposium on the Design of Office Buildings

An afternoon and evening Symposium on the design of Office Buildings will be held at the Royal Institute at 2.30 p.m. on Thursday 12 April. Papers on various aspects of the subject will be delivered during the afternoon, followed by an interval of one hour for refreshments, after which there will be a discussion. The Symposium is being organised by the Science Committee of the Royal Institute.

Admission will be by ticket only, price £1, and this will include a buffet meal and a copy of the report of the Symposium. Fifty tickets at a reduced rate of 10s. will be available to Students R.I.B.A. and these must be taken up by 20 March, when the concession will be withdrawn. Application for tickets, accompanied by a remittance, should be made to the Secretary, R.I.B.A., to whom cheques and postal orders should be made payable. Envelopes should be marked 'Office Buildings' in the top left-hand corner.

Lecture: The External Cladding of Buildings

Mr. Edward D. Mills [F] is to deliver a Science Lecture on *The External Cladding of Buildings* at the Royal Institute on Tuesday 20 March at 6 p.m. He will discuss his subject under three headings: *Heavy Cladding* covering natural stone, slate, precast concrete and concrete storey height panels; *Light Cladding* covering curtain walling of various types including aluminium, stainless steel, pressed steel, rolled steel section, timber and patent glazing with various infillings; *Sheet Cladding* covering asbestos cement, aluminium and stainless steel in lightweight sheets.

Mr. Mills will discuss the general problem of cladding buildings, some of the difficulties which have arisen in the application of certain systems to buildings in the United States and the practical and aesthetic problems which face architects in this country in the use of various cladding techniques.

The British Architects' Conference

Enclosed in this issue is the programme and form of application for membership of this year's Conference which is being held at Norwich from 30 May to 2 June. The hosts are the Norfolk and Norwich Association of Architects who are opening the Conference with an informal reception at the Assembly House.

The subject of the Conference is now settled as *Architectural Economics* and the speakers are Dr. Leslie Martin, M.A. [F], Mr. E. D. Jefferiss Mathews, O.B.E., A.R.I.C.S. [F], Hon. Secretary R.I.B.A., and Dr. J. C. Weston of the Building Operations Research Unit of D.S.I.R. In many respects this subject is a natural sequel to last year's discussion of the architect's responsibilities in the organisation of the building industry in that it seeks for ways of improving the quality of architectural services to the nation and in being a matter of concern to all architects.

The less serious aspects of the Conference—the Civic Reception, Garden Party and Conference Dinner—are in accordance with custom, but there is also to be a service in Norwich Cathedral, for which a precedent was established at the Liverpool Conference in 1948 and at Canterbury in 1953.

For the tours Norfolk, with its centuries old high development of agriculture, its long coastline and charming inland waters, provides its own special brand of scenery. Prominent in it are giant churches and splendid country houses. The City of Norwich, though battered in the war, still contains more buildings of high architectural interest than there will be time to see. Making full use of their peculiar advantages, the Tours Committee have arranged that two tours shall include launch trips on the Broads.

Plymouth Station Rebuilding

The scheme for rebuilding Plymouth Railway Station has been approved in principle by the British Transport Commission. The design was illustrated in the JOURNAL of April 1951. To cost about 1½ million pounds, the station building incorporates the newest arrangements for the convenience and comfort of passengers, a large parcels handling depot and—in an eight-storey office block which dominates the design—the offices of the divisional administration. The architect is Mr. H. E. B. Cavanagh [A], Architect of the Railway Executive, Western Region. Included in the cost are items of track replanning and a new signalling system which concentrates the work of six separate signal boxes into one new one.

R.I.B.A. Prizes and Studentships 1956-57

On the invitation of the President of the R.I.B.A., Sir Hugh Casson [F] has undertaken to give the Criticism of the drawings submitted in competition for the R.I.B.A. Prizes and Studentships, 1956-57. Sir Hugh Casson's Criticism will be delivered at a General Meeting of the Institute to be held in February 1957.

Concrete and Constructional Engineering

Fifty years ago the periodical CONCRETE AND CONSTRUCTIONAL ENGINEERING was founded and in January it celebrated that fact with a special commemorative number. During that time it has had two editors only. The first was that remarkable personality Edwin O. Sachs, a man of dynamic energy who, though dying at the age of 49, managed to find time to become an authority on theatre design and, as chairman of the British Fire Prevention Committee, to be the father of the modern technique of fire protection and research. That infant material, reinforced concrete, was but one of his many interests. The second and present editor, who modestly refrains from giving his name in the special number, is Mr. H. L. Childe. He was appointed editor in 1922 at the age of 29, after 4 years' service on the staff of THE BUILDER.

The special number consists mainly of articles on the history and development of reinforced concrete in the principal foreign countries, contributed by an acknowledged expert in each. It will form a useful work of historical reference, besides being fascinating reading for the present day student (of any age) of reinforced concrete. Almost inevitably the first of these articles is on France and by M. E. Freysinnet and the first illustration his famous hangars at Orly.

Great Britain does not come out too well because, as the editor observes, 'the contribution made by this country to the technical development of the material and its uses has been lamentably insignificant'. Foreigners, particularly the French and Swiss (e.g. Robert Maillart), have always been in advance of us. The American contributor, Mr. R. H. Bogue, does however pay a graceful and well deserved tribute to Dr. F. M. Lea [Hon. A], now Director of Building Research, as a world authority on the physics and chemistry of cement.

Institute of Wood Science

On 26 January a Press conference was held to announce the inauguration that day of the Institute of Wood Science, the main object of the Institute being 'to advance the scientific, technical, practical and general knowledge of persons interested in the study of wood and allied subjects'. The Institute will concern itself directly with education in timber technology or wood science, and it aims ultimately at becoming the examining body in at least the senior examinations on the subject, although at present it cannot take over the organisation of educational courses as they exist today. Other intended activities include the organisation of meetings, lectures and excursions, co-operation with other bodies having similar objects, and the establishment of branches in various parts of the country. The issue of a Journal is one of the primary objects of the Institute.

It is proposed that membership shall fall into the following categories: Fellows, Associates, Certificated Members, Ordinary Members and Junior Members. Bodies and individuals not eligible for normal membership, but wishing to support the Institute, may become Patrons. The offices of this new Institute are at 21 College Hill, London, E.C.4.

This Journal

In common with all periodicals, this issue of the JOURNAL is being produced under considerable difficulties arising from the present industrial dispute in the printing industry. We have had to omit some items and to condense others. While doing our best to avoid errors, we hope that readers will overlook any imperfections which may have crept in.



New Chairman's Badge for Berkshire Society

We reproduce here a photograph of the new Chairman's badge of the Berkshire Society of Architects. Unfortunately, not having colour, we cannot do justice to it, but it can be seen to be a very handsome jewel.

The design, which was selected as the result of a competition among members of the Society, consists of the Berkshire county shield supported by the R.I.B.A. lions, with a crest of oak leaves representing the royal forests of Berkshire, the River Thames at the foot with its two Berkshire bridges, and, crowning all, the Royal crown because of the county's associations with Windsor. The lettering is gold on a dark blue background, the Thames is light blue, the lions 'or' on the blue and white shield, and the ribbon blue.

The names of Chairmen prior to 1953-54 are engraved on the back of the badge, and the names of the present and future Chairmen will be on enamel clips fixed to the ribbon.

M.O.W. Building Plant Exhibition 1956

This year's Building Plant Exhibition, organised by the Ministry of Works, will be held at Newcastle upon Tyne from 12 to 19 September inclusive. The site will be at Gosforth Park racecourse. There will be working demonstrations of all kinds of plant.

R.I.B.A. Diary

WEDNESDAY 29 FEBRUARY TO SATURDAY 24 MARCH. Exhibition *Architecture in Australia*. 10 a.m. to 7 p.m. Saturday 10 a.m. to 5 p.m.

MONDAY 5 MARCH. 6 p.m. Library Group. *Queen Elizabeth's Surveyors*—John Summerson, C.B.E., F.S.A. [A]

TUESDAY 6 MARCH. 6 p.m. General Meeting. *Ritual and Architecture in Megalithic Monuments*—Professor Stuart Piggott, F.S.A., F.B.A.
TUESDAY 20 MARCH. 6 p.m. Science Lecture. *The External Cladding of Buildings*—Edward D. Mills [F].

The Motorway and its Environment

By Sir E. Owen Williams, K.B.E., B.Sc.(London), M.Inst.C.E.

Read before the R.I.B.A. 10 January 1956. The President in the Chair

I AM HONoured to be invited to address the Royal Institute. The last time was in the old building in Conduit Street, and it is indeed a pleasure to do so in this present building, the work of Grey Wornum whose enforced absence from ill-health for such long periods we all deplore.

Before coming to the subject-matter of this meeting I would digress. As you may know, I have spent a not inconsiderable part of my life in the pursuit of the vagaries of concrete. About 50 years ago your Institute was largely instrumental in forming a conference on reinforced concrete and the first report was published in 1907 with, I believe, the first regulations for reinforced concrete in this country. They were amended and a second report appeared in 1911 under the aegis of the Royal Institute of British Architects and remained for many years the Standard Regulations for Reinforced Concrete. It is interesting that at that time reinforced concrete was not looked upon with great favour, to say the least, by many engineers, and indeed was scorned as a structural material more suited to garden ornaments. Probably few members of the Royal Institute have knowledge of its early recognition of this material, and it is in tribute that I draw attention to it now. What is still more interesting is that recently, just for amusement, we worked to the old 1911 R.I.B.A. Regs., as they were affectionately known, instead of the latest of the Codes of Practice, which have followed one after the other, and it was interesting that in the result the old Regs. of 50 years ago gave, if anything, an economy—which shows what has been happening over the last 50 years! It is surely another demonstration of the pioneers providing the essential basis which is then subsequently played about with to little effect.

The subject of this Paper is 'The Motorway and its Environment'. It is not my intention this evening to present or even conjure up pictures of the finished results. It is rather an attempt to set the conditions and problems in true perspective.

As there is no motorway in this country, exactly what it means will vary with each individual according to his imagination or interest. To some with an eye on business it is a paradise of bulldozers, mixers and materials; but to others, the general public, it is a ribbon winding—or writhing—through the countryside, and in the imagination even the width of this ribbon varies; and of course there is a big difference in what is imagined by the motorway user and by the motorway neighbours. Now, before embarking upon any theory or suggestions as to what may be done to or with a motorway, one must first consider its planning conditions and, first of all—what is a motorway?

So far, the usual type of road is on ground level intersecting other roads on the same level and open to all classes of traffic. The motorway is associated in most minds with fly-overs, i.e. separation from all other intersecting roads, and probably that single feature is the distinctive characteristic of the motorway and its greatest influence on environment. The motorway is intended exclusively for mechanical traffic and the fly-over facilitates its control. The fly-over also achieves a higher degree of road safety, but—what is not generally known—it is under certain circumstances an economy. The cost of a fly-over taken by itself may seem extravagant, and generally that is accepted on the score of safety and speed. In point of fact, the fly-over will increase the traffic efficiency of the motorway by anything from two to three times, whereas the cost of providing fly-overs as against level crossings adds only one-third to the total cost of the motorway. From this it follows that for high intensity traffic, which would be the only justification for building motorways in this country, all new motorways should for efficiency and overall capital cost have fly-overs. This of course does not apply in countries of low traffic intensity such as Canada. The necessity for fly-overs in this country is emphasised as it has a profound influence on the environment, calling for embankments and cuttings to negotiate the existing traffic routes.

We all know that the straight line between two points is the shortest, but fortunately even a comparatively large departure from the straight line does not add so much to the distance. A motorway cannot be in a straight line owing to natural and artificial conditions and it is interesting to consider how much it can depart without detriment to the user. Existing routes between any two points in this country are in general 12½ per cent longer than the straight or 'crow-flying' line, that is to say, that if you were to measure the straight line on a map you would find that the road reference books give a length of about 12½ per cent more. To increase the distance between two points by 12½ per cent allows a total deflection laterally from the straight line of about 25 per cent of the length of the route. If you make a half-circle connecting two points, that is to say a 50 per cent departure from the length, there is an increase of approximately 50 per cent on the mileage. Generally, up to 12½ per cent increase in route length may be termed 'direct' but after that it may literally be 'circuitous'. Experience on by-passes shows that any material increase in distance between two points on a new route is disastrous to its use. For example, a by-pass making a half-circle of a town has proved to be little used. Existing roads or

their tracks were there first and everything has grown up around them. Their 12½ per cent increase in length over the 'crow-flying' line was caused by natural conditions. The motorway comes in when the existing roads have already occupied the best positions and has to be fitted into a country well built up. Therefore there is a pressure to make them tend towards the circuitous—which would be against the value of the motorway. The motorway must therefore struggle hard to get a route which is certainly not longer than the existing road and this is a definite limitation to the choice of route. In general, the motorway should keep as near to centres of population on its route as possible, right up to the limit of their likely development but not so as to make too big a detour for this purpose if it alters the distance between the terminals by materially more than 12½ per cent.

Another condition is the reduction of up and down gradients. If the two ends of the motorway have, say, a natural actual difference in level of 500 ft. this must, of course, be climbed. The sum of all the up-gradients—which is termed 'the ineffective rise', i.e. beyond the necessary climb—must be kept down to a minimum and certainly must not be more than what is found on the existing roads, which again have the advantage of the best positions and without any fly-overs to negotiate.

These two factors of 'directness of route' and 'minimum climb' restrict the choice of the route and in a country such as ours, which is comparatively flat and without great natural obstructions, they can become the governing conditions, whereas in mountainous or otherwise obstructed terrain pure engineering conditions control.

Now why is it necessary to enumerate these conditions when dealing with environment? It is these conditions which influence the environment and it will be influenced more or less according to the density of population in various countries. To impinge on the conditions, the value of the motorway may be seriously impaired, even made useless, so that it cannot be pushed about all over the map for any light reason. This country is essentially high density built-up with about one person per acre compared with, say, British Columbia with 200 acres per person and where the roads may have one house per 100 miles. We here, in contrast, have as many as 100 land interests per mile or even more. Dealing with the disturbance, severance and livelihood of these interests is the root of the problem of environment. Maintaining natural and artificial drainage, roads, railways, canals and—not to be forgotten—footpaths and avoiding as far as possible the cutting of farmland and other properties becomes of paramount

importance. The motorway with fly-overs not connected with the existing roads may easily become, so to speak, a dam or barrier cutting the country into sections only to be countered by ample access under and over; maintaining roads, footways, farm tracks, and all other services, which in a country like ours results in two or three bridges per mile, whereas in a low density unbuild-up country there is more likely to be only one bridge every 20 or 30 miles. These are the differences between our problem and that of Canada or the greater part of the United States. Here it is a delicate operation far removed from the bulldozer and mixer conception. It is necessary to have this broad view of environment before getting to the details of its treatment, but apart from subsequent treatment it is as well to emphasise what the route of a motorway in this country means as a land problem. With a dictatorship presumably the motorways could be started at any time, although not necessarily in the right places, as has been proved elsewhere. Democracy demands consideration of all interests, large and small, and this takes time. On a road, say only seven miles long with 900 land interests, there may be as many as 9,000 land plans and those who demand a shortening of the negotiating time are almost certainly the first to shout 'Crichel Down' if it is done. It is seldom found, to put it mildly, that anyone finding the motorway passing even at the bottom of his garden joins in the demand for immediate action. On the other hand, those who have no danger of this are loud in their demands for rapid action. Ministerial enquiries for the protection of these interests may seem long drawn out, but what is the alternative? Is it better to save time at the expense of sacrificing individual interests?

With this broad view of environment, some line can be seen of achievement and treatment. Individuals picture the motorway narrow or wide according to their knowledge or imagination. It is in fact no narrow ribbon. It is something over 100 ft. wide, about four or five times as wide as the average existing road, plus width of embankments—and that must be pictured first. Having fly-overs, i.e. passing over or under all transport routes, and having the added difficulty of being last in the field and therefore having to take the more difficult lines, and with the need to minimise ineffective rise, the motorway is largely either on embankment or in cutting, indeed it may be about half of each. The motorway user may travel up to a half of his time between banks of varying heights. It is the treatment of these embankments and cuttings which is the most important visually, both to the surrounding population and to the user of the road. If the cutting is in rock—unusual here—the almost perpendicular face is practical and not unpleasant, but if the cutting is—as is more usual—in clay or something similar, the banks will slope about 30 degrees. If they are made steeper they will not be stable, and anything flatter is not permissible from the

point of view of cost and the waste of land. These sloping banks are not so fearsome when in comparatively shallow cuttings but can be most unpleasant in deeper cuttings, say 30 to 50 ft.

There is a good engineering case for flatter slopes in the deeper cuttings and this can be achieved by the simple expedient of using a flatter angle, but there is a preferable method of obtaining the object of flatter slopes, namely by using the same slope of 30 degrees interrupted at various heights by narrow platforms or shelves, usually termed 'berms'. These are useful for the maintenance of the slopes and trees can be planted on them and so act as some protection against slides and erosion due to the drainage on long slopes. The slopes of great depth will therefore be broken up by shelves with clumps of trees, increasing their pleasantness to the road user. Embankments supporting the road should be treated in the same manner, and indeed there is a greater engineering need here for the shelves or berms which would give the same relief to the surrounding population. This means that the slopes of embankments and cuttings have to be designed in detail, which is not unreasonable when their visual area is considered.

There is one aspect of road planning little known generally as it is a comparatively recent development; this is known as 'flowing alignment', which may be defined as the correlation of the vertical and horizontal curves of the road surface, the object generally being to have the tangents of both curves coinciding, thus relieving the road user of disjointed perspectives. This is undoubtedly a valuable influence on his environment, giving sweeping lines without 'kinks'. This is an important factor on the siting of the motorway, but must not be carried to extremes as it can then be very restrictive on siting and lead to very heavy earthworks. It is clear that the minimum amount of earthworks, i.e. excavations and embankments, causes the least present and ultimate disturbance to the countryside. If the country were dead level there would be, even so, a considerable amount of earthworks to go up or down over fly-overs every half-mile or so. The reduction of the earthworks to a minimum is to the good in the relation to environment, apart from cost. It is always as well to keep a maximum excavation figure in mind when planning as a sort of overall 'tell-tale'.

The motorway itself is divided by a central reserve so as to form two carriageways, and on the central reserve with the planning necessity for minimising the distraction of on-coming headlights there would be detached clumps of bushes which the planning necessity allows to be fairly widely spaced, achieving their object without a continuous hedge and with greater satisfaction to the road user. Tree planting beyond the width of the road itself is valuable as a sound barrier but with restrictive conditions of visibility and foundation disturbance. The use of these on high embankments and cuttings has already been mentioned.

Coming now to the structures on the motorway, these are principally bridges, sometimes over and sometimes under, and it is not my intention now to present any conception of results but to state the conditions which in a way require a new conception of them. Indeed the majority can hardly be called bridges but rather tunnels through the embankments. The width of the motorway, over 100 ft., inevitably makes any access under it something more than that in length. There may be a very small span, usually up to 40 to 50 ft., i.e. giving a tunnel effect. To most of us a bridge means the support by a comparatively narrow structure in which the opposite side is seen almost as clearly as the forward side, whereas for the majority of these underbridges—and there are many of them—the tunnel effect is what would be seen. At times in the past it has been half seriously suggested that bridges should be prominent, indeed to be felt as a hump to those passing over them and approached on a curve so as to be seen, but this of course only when bridges are not very numerous and the road narrow, even if it were a good idea at any time. With two to three bridges per mile it is quite a different matter; for example, if there were short parapets the road user would be subjected to a monotonous irritation of 'flick-flick' from parapets every half-mile and from the point of view of the surrounding countryside the line of the motorway would be impaired. The ideal is to have unobtrusive perforations of the embankments to carry on unbrokenly the line of the motorway with its hedges right over the tunnel mouths.

The usual governing consideration for bridges crossing the motorway is minimum thickness of construction to reduce gradients and earthworks in the crossing roads, and as main services have to be carried over such bridges, requiring a kind of box-type parapet as a service duct.

The railways had a relatively free hand in a country of far less population and were allowed almost to wreck the existing roads by distorting them both in plan and gradient so as to ease their bridging problems; but this is not permissible now, with the result that there is yet another condition influencing the siting of the motorway.

There are two definite credits to be given to the motorway in its general influence on the countryside. By its complete limitation of access there can be no question of any development, ribbon or otherwise, alongside it. But there is an even more valuable positive advantage to look forward to. The motorway will attract the heavy and fast traffic from the existing roads and return them, to a large extent, to a more reasonable and quiet use. It would tend to removal of the nightmare of heavy and fast traffic thundering through built-up areas. Whatever the noise may be on the motorway, it will not be outside somebody's door.

The environment of the motorway is everything touching the lives of the people on it or in its vicinity, increasing in diffi-

culty with the intensity of population. It is the task of weaving an immensely wide ribbon across an already tangled web and the equipment for this is tact and understanding rather than the bulldozers and mixers. There must be no copying. It is little use looking at what has been done elsewhere. Copying is always disastrous to design. To be fitting, the result must fit the particular conditions, which vary everywhere, and the philosophy must be faith in necessity. To the task of achievement there must be applied the universal principles of design; not what it looks like just when it is finished but after it has settled down. In a building this may be a year or so of its life, but for a road it is a matter of what it will be in 20, 50 or 100 years. When some explorers 150 years ago saw the Rocky Mountains they were at first appalled at the difficulties confronting them, and what one of them wrote in his diary would be a good reflection for those that fear the motorway: 'As I have always held it a crime to anticipate evils I will believe it a good comfortable road until I am compelled to believe differently.'

DISCUSSION

The Right Hon. Lord Winster, K.C.M.G.: As a layman I am very much interested in this question of roads, more particularly because we debated it in great detail in the House of Lords last year, when I must say I was astonished by the amount of knowledge which was displayed on the subject. Great emphasis was laid upon two points.

One of those points was that our roads are being required to bear to-day increasingly heavy loads. The size and the weight of these loads are quite amazing, and they are sent over roads and bridges which were never constructed for them.

The second point was that of expense, and expense at a time when restrictions are being placed upon capital investment. In that connection I would only say this, that the expense of bringing our road system up to what our modern civilisation requires will be very great indeed, but I ask myself whether it is an expense which we can afford not to enter upon. In this matter of expense I feel that Sir Owen gave us the right philosophy when he said that the philosophy must be faith in necessity.

The late Lord Balfour once enumerated some of the signs by which one can tell that a nation's civilisation has passed its zenith and that it is entering upon its decadence. One of these signs, he said, was that the nation ceased to add to its road system and allowed its existing road system to fall into disrepair.

That has set me thinking of two things. I have had some connection with the island of Cyprus. When the British took over responsibility for Cyprus in 1878 there were no roads in the island. Since then we have built upwards of 1,000 miles of asphalted road, many hundreds of miles of secondary roads, and a great system of roads through the forests, to enable the timber to be carried down to the plain. Taking Lord Balfour's criterion, I would

say that that is a fairly good sign that there has been nothing decadent about our administration of Cyprus.

The other point is this. I have just come back from a visit to Peru, and nothing that I saw there impressed me more than the road system of the ancient Inca civilisation. One can still either see or trace thousands of miles of the highways which the Incas built. They began their road system at heights comparable to the height of Mont Blanc and they laid it through the Andes at enormous heights. That road system was built by men who had neither the wheel nor horses, but they drove 2,700 miles of road through the Andes and laid 2,400 miles of road along the coast. In all, they made some 10,000 miles of road, from 6 ft. to 45 ft. wide, with road stations every four or eight miles along the roads. They laid drains and they made bridges, some of which were of stone and some of which were pontoon bridges, and there was, of course, the famous bridge of San Luis Rey which endured for five hundred years. I think that the Incas' road system, made by men who had only stone implements, is most impressive, and I think the Incas would pass the test laid down by Lord Balfour. They were conquered by the Spaniards and this wonderful road system then began to fall into disrepair, which I think proves that a period of decadence had set in in Spain.

I think that we can learn a lesson from what the old Inca civilisation shows us. We have to tackle our road problems with the same initiative and vigour as the Incas showed in driving their road system through the Andes. We cannot afford not to incur the expense.

Mr. G. A. Jellicoe, M.T.P.I., P.P.I.L.A., [F] in seconding the vote of thanks, said: It gives me very great pleasure to second the vote of thanks to Sir Owen Williams. He has been very much interested in architecture for many years. Over twenty-five years ago he posed to me and to a considerable number of others a problem which I have not yet solved. He produced a design for Waterloo Bridge on one pier only. It was absolutely unanswerable. I am very glad it was not built, but I cannot make out why. It seemed to be logical and sensible. He has made a great contribution, I think, to our profession by making us think about these things.

With regard to the subject of the paper, I think the Americans have done some first-class work. They coined the phrase 'the fitted road' quite a long time ago, and I think we may well apply it to our roads. This country really has a very difficult problem indeed. I think it has the most difficult problem of any country, in view of the enormous programme and the existing complexity of the landscape.

On the question of aesthetics, I want to tackle this subject from a different angle, namely, the idea of the road being designed from the angle of the moving panorama. The moving panorama is a side of architecture which I think is interesting architects a great deal at the present moment.

It is a very good clue to a fresh approach to design.

With regard to the various forms of transport, the coach, which obviously could not go very fast, appears to me to have been exactly related to the countryside through which it went. I think that the moving panorama of the Thames water traffic and of the canals must have been wonderful. Then the railways came, and I think that those who look out of the windows of railway trains do not feel associated with the landscape at all. Something has gone. You are moving too fast through a small scale landscape. When the scale of the landscape is larger than it is in England, such as in the Rocky Mountains or in Switzerland or Scotland, you find that it acquires a significance. Again, travelling by air over England is rather boring, to my mind, but it is a different matter when you fly over the Mediterranean and see shapes like that of Sicily. When you fly up the Nile you get the most wonderful panorama in the world, and you see the relation between speed and landscape.

Applying that to our particular problem, we find that if everything is puny or small along the route and we are travelling at a high speed it becomes annoying; the panorama unfolds itself in such a way that we do not appreciate it as we flash by. I think that one of the finest modern roadways is the Leatherhead-Dorking road, and it seems to me that, if one is travelling at a normal speed and not too fast, the shape of the road and the panorama on each side are exactly right, and we see the panorama unfold as we go along.

I do not entirely agree with the idea of not having a hedge down the centre of the road. If you are driving down a road with a hedge on the right, cutting out the traffic on the other side, you might still subconsciously be able to appreciate the panorama on the left hand side.

I think there is a vast number of interesting aesthetic problems which we have not really tackled in this country, for the simple reason that very few motor roads of this type have been made. We have a prodigious problem facing us, which affects us all and the whole country, and I hope the Institute will do all it can to see that the aesthetic side is considered. My fear of the engineer is that it is so much simpler to draw a line from there to there and to set the road in that way, and that before we know where we are the bulldozers will be at work on it. I want to see the road given the Hogarth curve of beauty which Sir Owen Williams so clearly appreciates.

Professor L. Dudley Stamp, C.B.E., D.Litt., D.Sc., Hon. M.T.P.I.: I think that I have been invited to come here this evening to represent a quite different point of view, the point of view of the countryside, of the Council for the Preservation of Rural England.

I suggest that we should remind ourselves very briefly of the history of our roads. The first time we had national planning was 2,000 years ago, when the Romans opened up the countryside. I suppose that

from that time to the present day our roads have grown naturally, primarily in response to the need for getting from one settlement to another. Lord Winstler referred to the necessity of bringing our road system up to date, but I would suggest that what we have now to do is to get used to something entirely different, that is, the superposition of a new concept of motorways on top of and to a large extent independent of our existing road system. Instead of thinking of a road going from town A through towns B, C, D, E, F and G to town Z, I think we should try to visualise a small number of motorways starting from nowhere, going to nowhere and passing through nothing. That is a slight exaggeration, I know, but I am even doubtful whether we should think of a road running from London to Birmingham; we should rather think of a road avoiding both cities but accessible from both.

That seems to me to be a fundamental matter in the planning of our proposed new road system, and I think we must get used to a great number of new ideas; for instance, the idea of restricted access to a road. No longer can the motorway be available as of right to every citizen.

Sir Owen Williams said that in this country we have about one person per acre, but that includes the whole of the highlands of Scotland for good measure. In England and Wales we have only three-quarters of an acre per head of the population, and every fragment of land is precious and wanted for many purposes. The great difficulty is to allocate our land for the various needs of mankind—for our industries, housing, recreation, roads and training grounds—and leave some of the open ground for the production of food and timber, as well as for the all-important question of amenities. The C.P.R.E. is constantly struggling for the retention of some of the attractive open land of this country for amenities. It is a very real difficulty.

I cannot go into the details of that now, but I would beg you to think in terms of fitting the road into the very complex pattern of land use which we have in this country, primarily avoiding the settlements, primarily avoiding the best productive land, primarily avoiding the most attractive of our scenery from the amenity point of view, primarily avoiding the break-up of good farm units, and so on. If you do that, I am not quite sure where the road will be able to go, but it is a problem to be tackled somehow.

Mr. K. L. Kelly (Secretary of the Automobile Association): I am neither an architect nor an engineer. Motoring is my profession, trade or craft—call it what you will—but the point which I want to make is not essentially a motoring one, and that is why in a sense I am apologising for making it at all.

I have been rather struck by the fact that neither engineer nor architect this evening has referred to the question of parallels in relation to the appearance of a road both to the distant observer and to those who

drive along it. I was slightly alarmed to see that in the examples which Sir Owen Williams showed on the blackboard he indicated two carriageways, both in the same plane, and in the references which have been made to the dual carriageway the inference has been that there will be usually an even distance between them.

It seems to me that the great advantage which a motorway gives to the designer, in relation to fitting it into the landscape, is that it presents him not with one track but with two tracks. I am glad also that the motorway which we envisage has only two tracks and not six, which the all-purpose road has, with cycle-paths and footpaths, which have bemused road designers and road users alike for quite a long time.

If one accepts the fact that the two carriageways of a motorway need not be at the same level and need not remain at the same set distance apart, some of the other problems to which reference has been made this evening become much less difficult. That applies even to the problem of the tunnel taking an existing road under a motorway. It need not necessarily have 120 ft. to go. There might be two over-bridges, each carrying one of the carriageways of the motorway, which at that particular point might be not 10 ft. or 15 ft. apart but perhaps as much as 100 yds. apart, enclosing within them some existing feature, such as a copse or some land which is perhaps not valuable for anything except to be left between the two carriageways.

The other problem which also begins to disappear when one thinks of the divergence of the two carriageways is the problem of dazzle. I am one of those who do not think it necessary to assume that there must be planting on the central reserve. It seems to me that many road users nowadays are a little bemused by the dazzle problem because vehicles are going in either direction on the same track. With a divided carriageway the problem becomes less, and the more one alters the parallel of the carriageways in two planes it becomes less again. I do hope that in the design of our motorways and in fitting them into the countryside the importance of this will be taken into account.

Sir Owen Williams, replying to the discussion, said: I should like to thank the mover and seconder of the vote of thanks and the audience for the way in which they received the motion. I hope, being a person of an entirely modest nature, that I deserve the kind things that have been said.

One wonders about the Incas' roads and what they did with them when they had not got a wheel or a horse. As for decadence, I think I am right in saying that, the Incas having built the roads, the Spaniards came over and defeated them with twelve horses, so I think that they were a first-class example of the decadence of a Welfare State. Every few yards along the roads they had everything worked out; they had their fuel stocks and their flour stocks; they had everything except guts.

Mr. Jellicoe referred to Waterloo Bridge. There is a bridge of ours which was passed by the Royal Fine Art Commission, and since then quite a number have been built of that type, on a single pier. It is not a bad idea, but I will not go any further into that at the moment.

With regard to Mr. Jellicoe's ideas about transport, I quite understand what he means about the panorama, but we must remember that this road will be in cuttings and on embankments. Mr. Jellicoe went through the various forms of transport, including air transport. When one travels by air one is often above the clouds and does not see anything. What we have to remember is that on this motorway we shall never be on level ground; it will always be either up or down.

I think that Professor Dudley Stamp could not have described better the operations which we have to carry out. We do not want to go into towns; we want to go round them. We want to go as near to them as is necessary to pick up the traffic, but no nearer. Land is the problem, of course, but it is not so great a problem as some people imagine. On a motor road there will be about 22 acres to the mile; that is quite a lot but not as much as one might picture; and with agricultural land at £50 an acre or £100 an acre it is £1,000 to £2,000 a mile; but the road itself will cost £250,000 a mile. I can see the difficulty in balancing the land against some constructional problem on the road. Of course we have to be philosophic about the land problem. Land is valuable. I should say that probably we do not know the value of land in this country. The price of agricultural land is very little in relation to its price for some trivial thing such as making silk stockings, when it suddenly jumps to £2,000 an acre.

I do not know how much land Mr. Kelly would have us use. He wants roads to wander about and not to be together, parallel on either side of a central reserve. You could have two cuttings, with a little knob between the two, or two embankments with a nasty foul ditch in between. I think all that Mr. Kelly conjures up depends on the place being flat. The cost would be enormously increased, and there is not necessarily any advantage in the central reserve varying in dimension; in fact, it would complicate the problem. Imagine what it would mean. At every crossing we have enough trouble with one crossing. To have two crossings would cause more trouble.

Mr. Kelly referred to land which was not valuable, but believe me, everybody's land is valuable. If you want to buy a person's land he says it is the best land in the country, and if you offer him some other land he says it is the worst land in the country and he will not have it. There is no doubt that this land problem cuts into the very core of our existence. We have not got enough land, and we have to economise even though the cost of land appears to be an infinitesimal sum compared with the cost of construction.



Address to Students by the President

Mr. C. H. Aslin, C.B.E.

At the R.I.B.A. 7 February 1956

IT IS ONE OF THE ANNUAL DUTIES of the President of the R.I.B.A. to give an address to students on the occasion of the criticism of works submitted for Prizes and Studentships. It is not at all clear whether it is intended as a homily before the Critic is let loose upon you, or whether it can be regarded as an opportunity for the President to let loose a few avuncular remarks. It is a pleasing thing to note that the President has the opportunity of making such remarks as he will, before the Critic delivers his comments on the Prizes and Prize-winners. This makes quite sure that an audience will be provided, because it will inevitably wait for the most important part of the evening's entertainment. The choice this year appears to be between a ponderous, and doubtless irritating statement about the follies of youth, and an exhortation, after last week's frost, to take special care with your studies on the mysteries of plumbing. Avoiding both these subjects, the second with certainty and the first with great care, I think it is incumbent that I should say something about the constantly changing pattern of architecture, and the people who exercise it.

Two years ago I remember that Mr. Basil Spence was the Critic, and he naturally gave a delightful speech, in which he pointed out that the entries showed a great deal of inspiration and talent, and went on to hope that all the things put into these competitions would not be lost when you began to thrust out into what he called 'the jungle of private practice'. This is, of course, of tremendous importance, because the architect is engaged in the profession which gives him great satisfaction by merely doing the work, and if any part of this is lost, both architecture and the architect are the poorer; indeed it is one of those operations where the actual joy of doing the work is of far greater importance than any financial reward which it attracts, and it is, therefore, essential that the architect's integrity shall be maintained.

It is obvious to most people that the actual pattern of architects has changed completely in the last 50 or 60 years. At the beginning of the century there was a relatively small number of architects engaged in private practice, and a large number of people without any training happy to serve as assistants, with very little hope for most of them of ever becoming principals. At the present moment all architects are trained in the same way, and there is no division in education between the architect who runs a private practice or a local or national office, and those who, for a variety of reasons, spend their time as assistant architects in one or other of these

organisations. The whole pattern has now changed, and though a large number of qualified architects act as assistants to the more fortunate ones, it is essential that a pattern of work should be devised, so that each architect should have an opportunity of exercising to the full the qualities and knowledge which have been developed during the course which has resulted in his becoming a qualified architect.

I believe the solution to this problem is absolutely essential to the well-being of the profession. I can see no reason why this new pattern, which is inevitable under the new circumstances, should not be accomplished, but there is one point about which architects appear to be in some sort of dilemma, and that is as to how the qualified architect should be appropriately paid. Some part of the profession seems to have got it in mind that the only way any body of people can be assured of a proper reward is by means of some form of trade union. I think this to be an erroneous idea, because the moment one thinks of reward alone, and makes an institution whose sole object is to get that reward, you then have a condition which I believe to be fatal to architecture. In my opinion, the moment a body of people enter into an organisation whose prime aim

is directed towards remuneration, then the appropriate incentive to do the best possible work, particularly in this profession, is taken away. I believe the way to obtain an adequate reward is to demonstrate that the work done is of such a quality that it will earn the reward quite automatically. Some people have thought in the past that an extension of the Registration Act in order to make it compulsory for an architect to be engaged on every building would be a good thing. I do not hold this view, because I believe that architects can control all building by demonstrating that their work is so important that no individual or firm would dream of putting up a structure without the aid of the profession.

It is quite clear that during the whole course of this Institute's existence over the last 130 years it has spent its time in keeping up its high prestige, and I am quite sure that in the future, with your help, and in spite of the difficult and changing circumstances under which we work, it will hold and enhance its position, and produce architecture of which our successors are able to be proud, and at the same time help the large number of young members in all the problems and difficulties in which they are likely to be placed in the coming years.

Criticism of Work submitted for the R.I.B.A. Prizes and Studentships 1956

By G. Grenfell Baines, A.M.T.P.I. [4]

TO GET ANYTHING WORTH WHILE out of this encounter we must reach common ground. Not merely the common ground we are on now, this blessed plot of Portland Place, but the less tangible territory where our minds can meet and where perhaps we may learn as well as just listen or see. For in learning it is not enough to have seen or heard, we must *act* as though we had seen or heard. If we do not act that way, and if we are not thinking that way, we have never really heard or seen and might have been better doing something else.

Between the minds of younger and older men lies what may be called the jungle of time—a tangled undergrowth of years that hides our true selves from each other. In a few words I want to help us to do something about the jungle.

As a child I was incapable of thinking of my father and my teachers as anything but old men. To look at their photographs as children was quite unreal—out of my world. It is the prerogative of the young to regard it as 'my world'—at least in their feelings—but in one's thinking it must really be 'our world', peopled by beings of all ages. Even now there are those in the

world who would think you old and they would probably think me very old.

The basic you—that just now sees issues so clearly, feels so definitely, believes so fervently in the inevitability of 'it', that is the particular 'it' you are grasping at the moment—remains unchanged throughout time. Time tempers and shapes, but the material remains original. As you look at an older man you are looking at yourself plus time. He was like you, he has passed your way. If he cares to remember, he can tune himself into you; you have to be prophetic to tune in to him. Yours is the harder task, but if you want to get anything out of him you must attempt it. He should know the path back through the jungle but to you it is impenetrable and to meet anyone half-way you must hack.

You may think, 'Why should I go half way? He knows all the way back, let him come to me!' The truth is that nothing really worth while is to be got without effort, and the fruits of experience are worth while. You may gather them slowly as you live your course and probably most of them will come to you in that way, but if you will stretch out you might gather some now,

as well. The fruits of experience very often have their roots in mistakes; you will learn by your own mistakes, but it may be less painful to learn by the mistakes of others, and, more important, will leave you a greater margin of time to achieve your own successes.

Thus I have been like you and in time you will be like me inasmuch as years will have been added to you; years that will have carried you farther round the subject revealing new perspectives and possibilities along with blind alleys and impossibilities. But you may say 'Times change and I am different'. Times do change and you are always different, as I was in my time, but I have discovered neither times nor I were quite so different as I thought—as I think you will.

By now I hope our minds are nearer if not actually meeting, as I would like to try an experiment in promoting understanding. If it succeeds it will enlighten my later message. The idea for it came during last summer when, along with the Jury, I was looking at the sketch designs for the small Concert Hall. After about an hour of walking and wondering I found myself trying to hear Mozart. The feeling was irresistible. Why wanting to hear music or Mozart in particular wasn't very clear—it could have been the workings of a subconscious mechanism—but I like Mozart's music.

Since then I have thought, 'If musicians can read a score and find their emotions vibrating to a sense of form and rhythm, might not I read a drawing and experience an inter-relationship of emotions that caused me to hear music?' At this point some of the Soane entrants may find satisfaction in the thought that I did not hear Mozart in their designs, though that satisfaction could be mis-inspired. From this rather far-fetched notion of mixing musical scores and sketch designs with its earthy view of musical interpretation, came the thought that a picture in sound might stimulate perception in those mostly accustomed to working with their eyes. So as we have to think of concert halls might we just use our ears to remind us of them? And while listening, think of design problems generally and a vital factor in design of which I will have more to say.

Mr. Grenfell Baines then played four recordings. The first was the opening bars of Eine Kleine Nachtmusik which was violently interrupted by a variety of loud noises including one of men moving a piano and other musical instruments into a building. Considerable difficulty seemed to attend the operation and it was suggested that the difficulties might to some extent arise from the design of the building, though it was unlikely that a concert performance would suffer from such an interruption. In the second recording more music was heard—part of Martin's Petite Symphonie Concertante—a 'modern' work. The music reached an interesting passage; harp, clavessin and piano percussing amid the strings when an alien cadenza, the clattering of crockery and glassware, gradually superseded. This recording of restaurant and bar

noises is an interruption which might occur in a badly designed concert hall with a restaurant attached. There followed the effect of an ill-designed ventilation system on music. In the fourth recording music was superseded by a family quarrel taking place in a modern house where the plan was too open for the closed minds of at least three members of the family. Only the fourth seemed to be a likely client for a 'modern architect'.

Perhaps the most memorable experience of being Critic is the way in which the responsibility pushes one's mind into the void, outside everyday things which might be looked up in files. Somewhere, well beyond the bounds of normal human conception, reside the eternal verities. Occasionally one is wafted towards them by winds of circumstance, not to within sight, but at least within range of our in-built radar systems. At these brief moments power flows and we glow to throw a little light on the problems of our world.

For me these moments usually arrive while I am shaving. I wait, razor poised, not for a triumphant resounding fanfare that will herald the pieces falling into place, but rather for a quiet click. It never comes, but sometimes I go forward thinking I have seen one thing a little clearer and, in some strange way, glad the vision should have been so short and should have left so much still to be searched for.

So it is, I imagine, about any man's quest for the intangible things of the soul. In these flashes I believe we do gain crystal clear though distant views of the objective: comparing notes, we can often agree on that, but few, and those rarely, see the means by which the vision may be realised.

Politically an apparently impassable gulf lies between the East and West routes to the agreed objective of the freedom of man in a peaceful world; similarly, wherever there are a hundred architects there will be a hundred views of the way to architecture, that is providing they are not in two minds themselves.

On our quest however we would all be agreed. In one word, it is architecture. I have tried to define the word for myself, and to me architecture is 'the art of building'. I risk this knowing that definitions of art are like Chinese boxes, with the quality of infinity. But the risk must be taken because I consider that much 19th-century thought puts architecture and building as things apart and the thought persists today. The industrial client who asks me to 'put some architecture on a building which really my engineers have designed' is still in agreement, nor is he to be blamed. Though meaning well, Ruskin ran a grave risk of creating misapprehension likely to lead to divorce when he wrote: 'No person who is not a great sculptor or painter can be an architect. If he is not a sculptor or painter he can only be a builder.' Builder in italics—(his).

Standards must be high, but this is rarifying life out of this world and as events in the 19th century led to the separation if not the divorce of art and technique, it may be wondered was Ruskin knowingly

running a risk or was that just what he meant, irrespective of the consequences? Some time later in the 20th century, when already a revolution in architecture had begun, W. R. Inge wrote of another art: 'Literature flourishes best when it is half a trade—half an art.'

That awakens responses in me, but might we go further? Might we say art is not a thing or an end of itself—art is beyond the end and arises out of ordinary things done superbly well. Like happiness the less consciously it is sought for the more likely it is to arise. Speaking of his notable achievements in the art of jazz, Benny Goodman said recently, 'I don't know what it was about us: we just played the music well.'

If I were to say 'art is great in inverse proportion to its creator's consciousness of it', I might be going too far, but not if I were to say 'to its creator's consciousness of himself'. With deference to Ruskin, unless there be building there can be no architecture and unless you are a great 'builder' you cannot be an architect. Builder in inverted commas—mine. So for me architecture is something that arises out of great building; that it may be frozen music, 3D painting, large scale sculpture is beside the point.

As there are degrees of art so are there attributes, and in the art of building, character is vital. Beauty without character is skin deep and unlikely to live: it may not even be beauty but merely good looks. 'Handsome is as handsome does' runs the old saying. The commodity-firmness-delight formula, still valid, expresses this in another way.

Character is not born, is not a thing of the moment—the blast of a trumpet—it is a thing of time achieved out of effort. The desire to develop it may be congenital but without the effort through life it will merely remain wishful thinking. So character in building is made by the highest possible effort—supercharged, or prestressed if you prefer, by sincerity—the highest possible effort to know and understand the purpose of the building and in so doing to fulfil it.

Art has been analysed as fine and useful and architecture as something between the two. I prefer to think of architecture as both fine and useful, not just between them, and agree with Paul Ritter that whereas art has been described as 1 per cent. inspiration and 99 per cent. perspiration, architecture is 99 per cent. inspiration and 99 per cent. perspiration.

This brings me to interim conclusions, the first of which is that I find a growing delight in balance: to me a good design is a balance over as comprehensive a range of considerations as is necessary in our day and age. From that I conclude that in spite of the striking advances of the last fifty years we have not yet seen a true revolution in architectural design. I would go further: though much 20th-century architecture has been described as functional and there has been a popular belief that its inspiration is derived from the functional approach, I cannot support that belief. That there has been a fundamental change in design is true, but the revolution has been

a technical and aesthetic revolution, tyrannously technical and intolerantly aesthetic.

One may forgive some intolerance in aesthetics, but submission to the tyranny of technology is folly in oneself, while to expose innocent parties to it amounts to criminal neglect. The designer who wipes away whole walls, replacing them with glass, with a 'look! one hand' gesture, completely regardless of the consequences in terms of human comfort—physical and mental—or the economics of maintenance, heating, cleaning and curtaining, is in danger of being as guilty of over-emphasis as Ruskin. If his mind is out of balance his design will be also.

At this point may I make it clear that I do not mean a negative balance of compromises, but a deliberate and positive sum-total of all the possibilities, wedded together by judgment arising out of a sense of responsibility sustained by knowledge. Not only knowledge of your problem, but knowledge of yourself. I might be able to help you towards better knowledge of yourself when I deal with your attitude of mind, but having said I do not believe we have yet seen a functional revolution in architecture, I should define what I mean by function.

A building, like man, has two lives, an inner and an outer life. The sum-total of service that that building can offer to man is how it enables him to *live* within the building, pursuing the special purposes for which it was designed, and how it enables the passer-by to derive that little more from life that turns biological existence into living well.

In these terms function within is not merely the shaping and arranging of spaces for convenience, but also the physiological aspects of 'climate' involving questions of comfort or discomfort over the full range of human senses. And not only these, but the less tangible qualitative factors, such as visual comfort, not a separate aesthetic matter but an integral part of the whole over which you must be master. So much for the inner life. In its outer life a building's main function is to age gracefully. And how woefully few are the modern buildings that measure up to that criterion, either in weathering outside or wearing inside.

Much more imaginative and perceptive thinking about weathering is needed; the desire and ability to assess the combined behaviour of air currents and rainfall as they impinge on the mass of our buildings. A knowledge of the angle of repose of the deposits of atmospheric pollution would help in design for weathering, and if you should think 'What has this got to do with the great issues of architecture that are facing me now?' remember 'Beauty often springs from the most unlovely origins', or if this thought of J. L. Lowes does not appeal, you may accept Aristotle, 'The investigation of everything should begin with its smallest parts'. And lest some of you should worry that all this will sap your power as poets, or that it all sounds like cold baths and puritanism generally, perhaps you will find hope in the words of a

recent broadcast by Llewellyn Davies: 'Inadequate half-baked knowledge limits the imagination, real understanding sets it free.'

As architecture is the end of a creative process it depends on ideas. Ideas are the inevitable reaction of a cause; the more vividly the cause is apprehended the livelier the reaction is likely to be. As you really perceive the purpose of building you not only exercise your imagination, but you will get ideas to shape your design, instil character and most of all inspire *life*.

By now I have really moved to my second subject, attitude of mind, and in particular *your* attitude of mind, for it is that which determines your architecture, if architecture it is to be. It is important to realise that architecture begins in the mind, and the schools are right in their avowed aim of developing minds rather than architectural assistants. But a well developed powerful mind is useless unless it is rightly oriented. The best driver in the most powerful car is useless in a rally if he is on the wrong road.

Earlier I have spoken of knowledge of your problem, but knowledge of yourself is vital, for however much you may know of the theory of architecture you won't be an architect till you know yourself. Knowledge of how you work can help you to use your individual virtues and capacities to the best advantage. This will not only lead to character in your design, but will fit you for the teamwork that modern building is, and if you are worthy, the place of leader in the team, which is what we are supposed to be.

Of the many facets of knowing oneself I will mention only a few that experience has shown me to be important. They are an awareness of inevitable internal conflicts, a realistic assessment of the times in which you are living, and a clear view of the purpose for which you live.

I find the internal conflicts most difficult. I can see them, I can understand why they are there, but only in my better and rarer moments do I realise why I should have to make my peace with them. For instance, how can anyone but a genius be a mixture of Michelangelo and Mr. Isaac Wolfson? We are not geniuses, but this combination of personalities is what our clients expect us to be, an amalgam of artist and businessman that somehow must be made homogeneous. Emulsions of incompatible substances are created by violent agitation, and that sums up fairly the inward storms you must accept on the way to a fair and firm reconciliation.

I would not suggest you worry unduly about this at your present state of life, but would ask you to note in passing that wishful thinking is an occupational disease of architect and client; it is highly infectious, even builders have been known to catch it and they can only be cured by large and frequent doses of money. This can upset the client; and does, believe me. So while you nourish the artist in you and exercise him into a vigorous and vital organism, spare a thought for the client and don't neglect the businessman to the

point of atrophy, for reviving atrophy is a superhuman task.

There is a second inward conflict which is bound to arise as you go forward in your life as an architect. The Royal Institute (that means you) rightly insists on the best possible education—wide, deep, liberal, comprehensive. We seek to develop your tastes for fine materials, the arts, the civilising influence of travel, the discipline of science, for high standards in all things, and in so doing naturally develop appetites and capacity to enjoy.

Then you enter the profession to find, to begin with at any rate, that somehow the rewards fall short of your capacity to use them. Architects who have imagined the joy of an open plan in a woodland setting find it a job to keep up the payments on a semi-detached in the suburb. School prints have to serve for original Picassos: public transport for Jaguars. This is not a counsel of despair. A gap between aspiration and achievement is essential to progress and while our work continues to earn greater public regard, as it is doing, so will the material status of the profession improve, and again that means you.

While not so much a vocation as either the ministry or teaching, architecture is a job of reasonable material and rich spiritual rewards; personally I cannot think of a better combination. So without being unduly introspective you will find it helpful to remember that underneath the immediate architectural problem, other and maybe unsuspected struggles are afoot. There is nothing unnatural in the situation and the surest way of keeping it in balance is to allow the interest of the job to crowd out the unworthy. Beware of wishful thinking, however; it works deep, in a subtle way causing incomprehensible aberrations with painful and time-wasting sequels, for beyond doubt, wishful thinking inevitably results in a disregard for economics which is one of the main causes of unbalanced design today, and this brings us to our times.

It is essential to consider the position of building in contemporary society in order to understand fully *why* economics should be such an important factor as to stand an equal partner with the classic three. In the days of commodity, firmness and delight, when events were on the threshold of the Industrial Revolution, building was *the* major industry concerned with the contrivance of materials. It is safe to say that in proportion to the productive capacity of the whole nation, building in the 18th century had a far greater share of labour and materials than it has today. Further, its programmes were infinitely simpler and the demands upon it came from fewer sources.

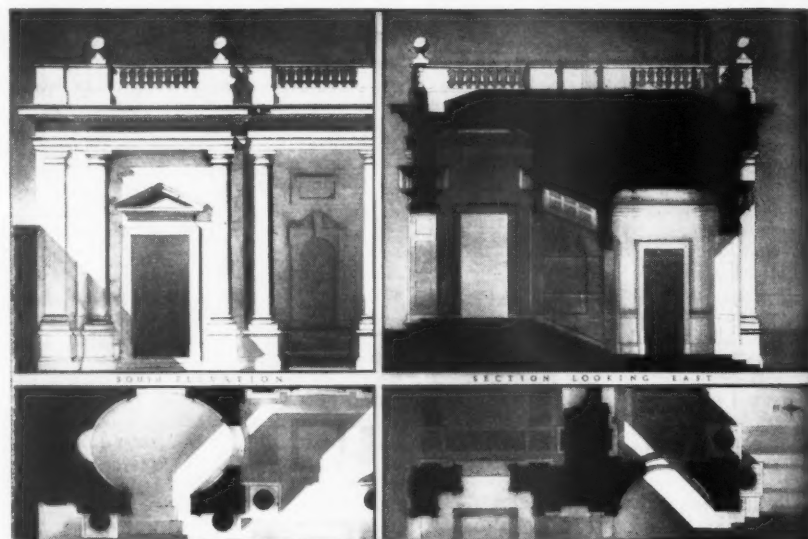
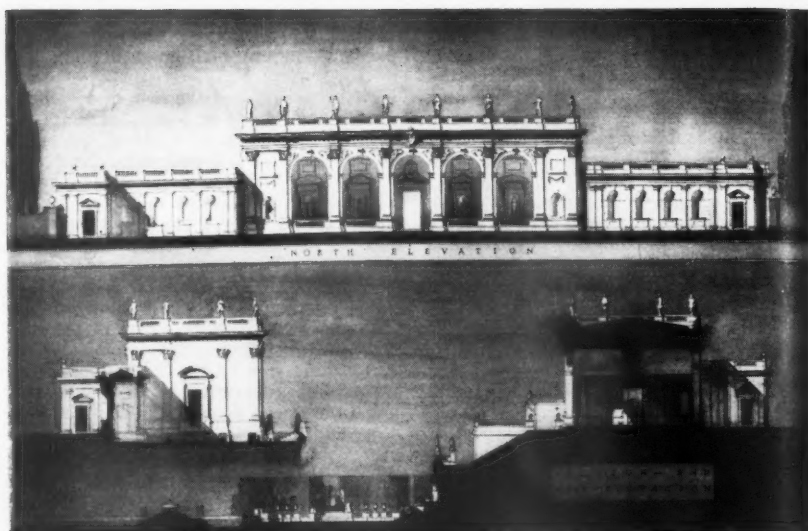
Today I would say that, in spite of help from ancillary industries, the proportion of labour and materials allocated to building by our modern industrial society is at an all-time low. At the same time the growing social ambitions of a vastly increased population have resulted in an overwhelming demand for more and more buildings of greater complexity to be produced in less time.

The strain of stretching a limited amount of building fabric over a greater field of need is almost intolerable. These opposing forces, diminution of resources and expansion of demand, are at the root of the continuing demand for economy. While the architect has a social responsibility to produce balanced design, where economy is given its rightful emphasis and false economy searched out and rejected, he must develop an economy sense as acutely as his feeling for form and structure. This can be done and we are being helped by the Ministry of Education as well as the technical papers, one of which has done outstanding work, to equip ourselves for this new responsibility.

Now we have reached the last of my factors in your attitude of mind—an awareness of your purpose. Our purpose is to design great buildings for our clients—great buildings in which they can do what they want to do better than they have ever been able to before, in which they can live with a minimum of discomfort and a maximum of pleasure. Our designs are incomplete without their human material. Our buildings are only part of a social structure in which the human material must take the strains and stresses along with the concrete. Within limits you can prestress concrete to make lighter members to take heavier loads; you can prestress the human material too, with delight, pride, even alcohol, but like the concrete it has a limit and the wise architect, conscious of his purpose, will know where that limit lies and when to postpone his aesthetic adventures perhaps even for another generation of architects and clients. You must be true to your ideals but your purpose is to design for clients first, other architects second and the thought of creating a monument to yourself last.

Faced with the choice between the speculation of pleasing posterity—a presumptuous assumption anyhow—and the probability of serving the present, I would rather strive to do something useful now in the hope that it will live, than do something unacceptable now in the hope that it may come to life in an unpredictable future. If this is a doctrine of safety it is one which requires more discipline, more control and imagination, sterner exercise of *mind*, as distinct from merely the eye; it is therefore more likely to lead to forgetfulness of self, and thus a greater likelihood of art arising, than any egotistical attitude relying on the philosophy of magnificent failure. Have ideas by all means, but be careful where you go for them; try things out, but remember in architecture ideas have not just to be bright, they must be right, and if they fail to stand up to the ultimate test of working with the human material, be ruthless, look at them again and reshape them till you know they will satisfy the programme in all the aspects you are capable of conceiving.

I have lived with magnificent failure and discovered it to be a substitute for full thinking and another form of that subtle evil, self-pity. The day I told myself I would rather starve in a garret than give up flat



The Tite Prize. The winning design by M. B. Everitt [Student]

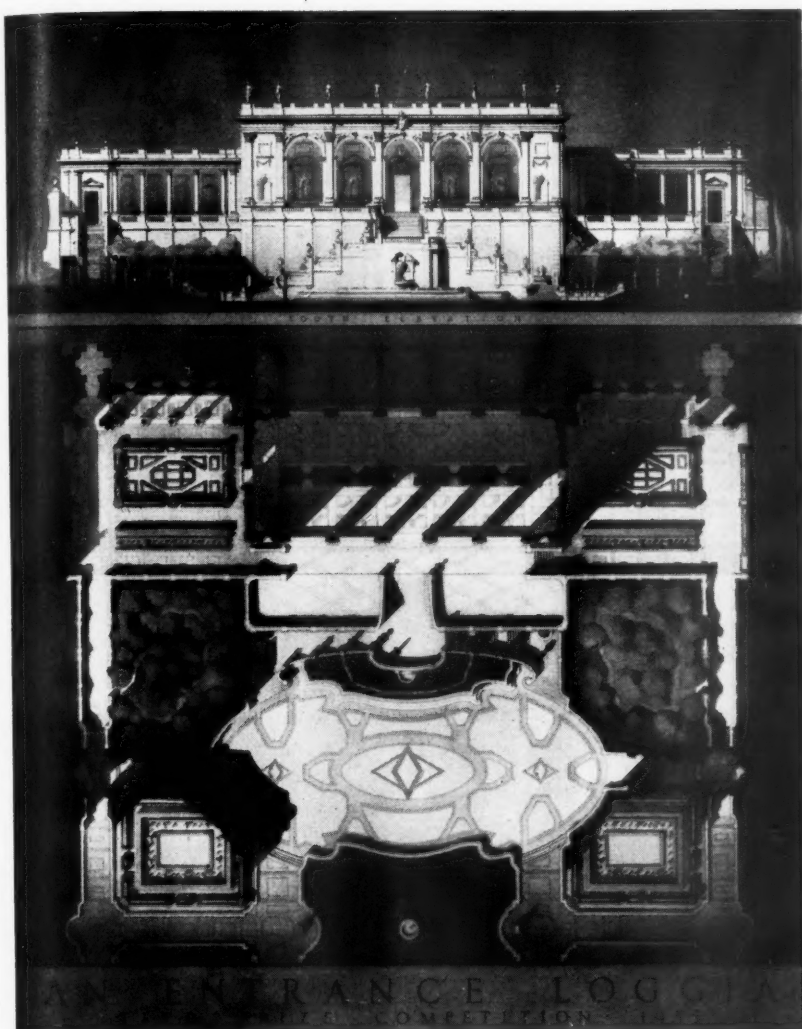
roofs, then realised I wouldn't have had a garret to starve in if all the roofs had been flat, saw the beginning of an attitude of mind that, while it still hasn't produced architecture to satisfy me, has at least shown that designing out here in the world of men is much more exciting than living in an ivory tower or a garret.

Balance in behaviour and mind will help to produce balance in design and my behaviour tonight would not be balanced if I left out any reference to a policy for you that I think might help you towards architecture.

First, memorise the whole of the requirements until, like the words of the actor, they become part of your make up, until you can see each and every part in your *mind's* eye, thus being able to arrange and rearrange them without ever having

recourse to pencil and paper. Carry them about in your mind along with a picture of the site and whenever you have a little time let them come to the front of your thoughts. Get a vivid impression of the client in your mind; later you may find clients can be extraordinary even beyond your imaginings; but if a theoretical programme does scant justice to the client, and far too many do, then create your own client and like the playwright let your creation have a hand in the inspiration, always, of course, under your control as he controls his characters, and as one day you will control yours.

Do not see the outward forms only, but cut sections in your mind's eye until the hard requirements are completely plastic in your thoughts. Then think again, walk all over your building, open doors, enter halls, lifts, lobbies, lavatories, receive people



The Tite Prize. The winning design by M. B. Everitt [Student]

in the main rooms, materials in the store room, visualise the builders erecting it, and then you and your best girl approaching it on foot, in a taxi, in your own Rolls Royce. Think of the weather at work on it, think of the cleaners at work on it, and so choose your materials with the same care as you design your surface patterns.

Cultivate a sense of environment, later you will find the actual setting a fertile source of ideas and a sovereign corrective for misconceptions. I liked a recent remark of Stirrat Johnson Marshall at the A.A. 'A mastery of the principal physical conditions is surely essential to the design of a comprehensive human environment.'

If I may give direct advice, in the early stages of design don't have recourse to your pencil any more than you can help and to your board and tee square rarely ever. Some men need their pencils like babies their lollipops and some make their boards into millstones. Beware of becoming unduly immersed in drawing. Ability to draw is an

essential aid to expression, but it is up to you to decide how much the use of your creative ability on presentation really develops your capacity to be an architect. You must judge whether from becoming a draughtsman you are in danger of developing into a craftsman. Good handwriting will not necessarily make a sonnet.

Follow the current research work into functions. In this country brilliant examples are the Nuffield Research Group work on hospitals, the B.R.S. researches into house and housework, and the Ministry of Education Research Branch work on schools. Study too the process research work of the Building Research Station, and the development associations of the building industry among which Cement and Concrete, Timber Development and metal alloys associations are outstanding.

You may wonder where are the investments of grace and pleasantness in these restricted times. They live in landscape, hard and soft, outdoor and indoors; street

furniture; machine-made ornaments such as textiles, furnishings, artificial lighting effects and fittings, and the rich textures and colours of natural and synthetic materials in plain surfaces expressively arranged.

Then be receptive to criticism, try to detach your personality from your ideas so that they rise from you into the void where they can be examined purely as ideas and if necessary shot down; defend them vigorously before all others, but never bluff yourself, the more detached you are the less painful and more fruitful the process will be.

Remember finally, that the completely perfect answer is rather like the North Pole Star that helps the navigator to find his destination on earth—distinctly useful, though unattainable. Usually there are two or more good answers and when your general ideas have withstood the tests it is better to make a superb job of detailing a good idea than a slipshod job of a belated version of the perfect that in all probability would not be recognised as such by your peers, let alone the laity.

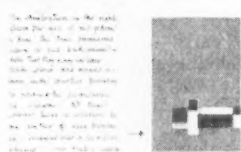
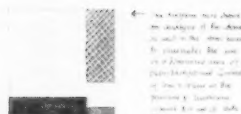
To conclude, I have tried to influence your attitude of mind by showing that knowledge of yourself, times and purpose can materially add to your power as a designer; you may have gauged my attitude through my definitions and interim conclusions, and I have suggested some lines of policy for you. Whether this is an adequate background to the Jurymen's remarks about your designs cannot be said, and I would not presume to claim that my views present adequate justification for their awards.

The prize entries are judged by Juries comprising many of the eminent members of the profession. I have been particularly impressed by the tremendous trouble the Institute takes through its leading members to set the programmes and judge the entries. It is therefore dismaying to note that for a number of years disappointingly few entries are made for quite worthwhile prizes, and I have wondered if in a way the history of architectural education has to some extent marched past the prize system. Before the schools, when the profession was largely responsible for training, the prizes had life as the main exercises of study, but today the schools have their own programmes and students find little time or inclination to extend their exercise by entering for the R.I.B.A. prizes. Perhaps if the schools were to strengthen collaboration with the profession by discussing with the Institute a considerable extension of the part played by the prizes in the school programmes, they could be given a new lease of life. This may mean a rewriting of some programmes, but the schools are used to that.

The Institute does grant exemptions from Testimonies and Theses to successful students; might it not be possible to allow all entries of a good standard, even if not actual winners, to count as evidence of appropriate study? Perhaps the Board of Architectural Education is already working towards this; it seems to offer both a solution to the problem of insufficient

PRIMARY COLOURS

The primary colours are the three colours which cannot be made by mixing any other colours. They are red, yellow and blue. All other colours are made by mixing these three in various proportions. For example, orange is made by mixing red and yellow, green by mixing yellow and blue, and purple by mixing red and blue.



THE OWEN JONES STUDENTSHIP. AWARDED TO MR. KENNETH A. WILLIAMS, DIPL. ARCH. (NORTHERN POLYTECHNIC) [4]



THE OWEN JONES STUDENTSHIP. AWARDED TO MR. KENNETH A. WILLIAMS, DIPL. ARCH. (NORTHERN POLYTECHNIC) [4]



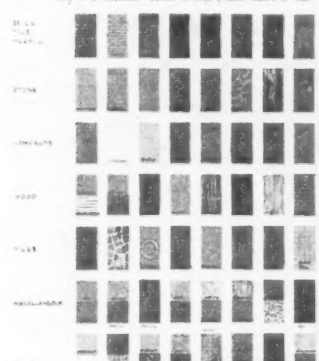
THE OWEN JONES STUDENTSHIP. AWARDED TO MR. KENNETH A. WILLIAMS, DIPL. ARCH. (NORTHERN POLYTECHNIC) [4]



THE OWEN JONES STUDENTSHIP. AWARDED TO MR. KENNETH A. WILLIAMS, DIPL. ARCH. (NORTHERN POLYTECHNIC) [4]

MATERIALS

The materials used in the construction of the building are of the highest quality. The stone is a fine, light-colored granite, and the brick is a high-quality red brick. The wood is a well-selected oak, and the iron is a high-quality wrought iron.



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interest and an opportunity for the schools and the profession to collaborate in developing architectural education.

The Tite Prize is awarded to encourage the study of architecture in the Italian Renaissance. My previous recollections of this competition have built up, almost into convention, a definite impression of a 'Titish' design; slender colonnades supporting semicircular arches, crowned by finely detailed entablatures and low-pitched roof, in a setting of cedars, distant hills and marble quarries. But the Renaissance expression ranges from Brunelleschi to Michelangelo, from simple delicacy to rich complexity.

This year competitors were asked to imagine a lovely spot in Italy where, on a street at high level, an entrance loggia to a public garden was to be built. From the street frontage of 240 ft. the ground sloped down 30 ft. to the south between existing stone walls protecting the gardens of large villas, presumably owned by wealthy manufacturers of exquisite typewriters or automobiles. At the bottom of the slope, flanked on either side by parkland and bisected along the centre axis by a canal,

lay the garden. The loggia could be used as a setting for occasional exhibits of sculpture and the programme also suggested seats from which views of the garden could be enjoyed.

Here was a challenge to one's awareness of setting and purpose. To invite initially and then to screen and unfold, to lead downwards gracefully, lingeringly, almost waywardly by changes of level and direction, to develop anticipation against a background of general effects until the garden is reached and all its detail beauty savoured with appetite. With a canal laid on, penetration of the layout by water seemed a natural and desirable sequel.

Most of the competitors sensed these possibilities to varying degrees, but judging by their presentation and layout few seemed to have gone to the far end of the canal—which is a pity, for apart from being an entrance, the scheme had to be imagined as the climax of a quarter-mile vista.

Of an initial 127 candidates 11 were allowed to proceed with final drawings.

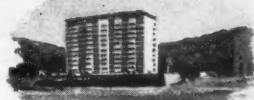
The Jury were unanimous in awarding the first prize to M. B. Everitt. Though more reminiscent of Michelangelo than the accepted version of a Tite design, it is a

coherent scheme of overall merit, designed with a strong sense of environment and a good grasp of architectural detail. Inviting without being too open, the entrance leads on and down through a rich variety of views, the stairs descending gracefully in well-proportioned flights. Planting is used successfully to break down the mass of the base wall to the pavilions, thus giving emphasis to the centre mass which is adequate to dominate the scheme and the scene. Water penetrates the scheme effectively, though the stair pool could with advantage have been more expansive.

The scheme is well related to its setting, and its connections with neighbours are realistically yet gracefully remembered. I personally liked the direct way out which had a cleverly contrived link with the main stair to allow for changes of mind; the author seems to have used his imagination to distinguish between the lingering tempo of anticipation and the mood of exit after realisation. Architectural detail shows a good sense of modelling which is fully expressed in a very fine set of rendered drawings.

This sense of modelling in detail is not, however, consistent in the arrangement of

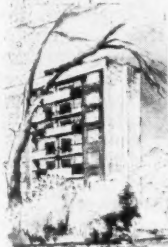
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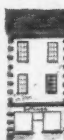
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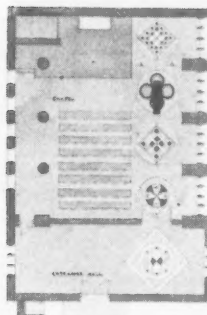
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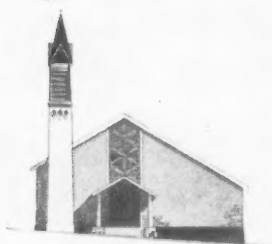
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DESIGN FOR A CONCRETE CHAIR

The Owen Jones Studentship. On these two pages are four of the eight drawings by the winner, Mr. Kenneth A. Williams

masses. The weakness of the link between the main mass and side pavilions shows up on plan and would be revealed even more so in three dimensions. There is an inconsistency of scale between the surface patterns of the side and main elements, and if one could presume to advise Mr. Everitt, he might spend some time studying how to relate and group basic forms and how to underline these relationships by choice of scale in surface treatment.

A certificate of honourable mention is awarded to Miss Alison J. Ross whose attractive entry has not the sustained quality of the winner.

The Soane Medallion. In view of the attractive programme for the Soane this year the standard of entries was disappointing and, as you know, the Jury decided not to make the award: with their decision I agree entirely.

The preliminary competition attracted 125 entries from which 13 were selected to proceed with final drawings. Not all of these submitted schemes and as one in particular looked to some of us like being a winner it seems a pity that circumstances, whatever they were, prevented the author from finishing his scheme. At the risk of being unjust I would underline the lesson of this; if the Jury does do you the honour

of selecting your sketch design, back them up by going on to finish the job—it may result in something to your benefit.

This year's subject was a small concert hall for 800, in which chamber music and other small scale works of the great would be presented by orchestras up to sixteen with a soloist. A well-treed setting in Regent's Park, good access to a main road; a formal group of buildings round a church in the near vicinity to add character to the plan, whether the group was recognised or studiously avoided.

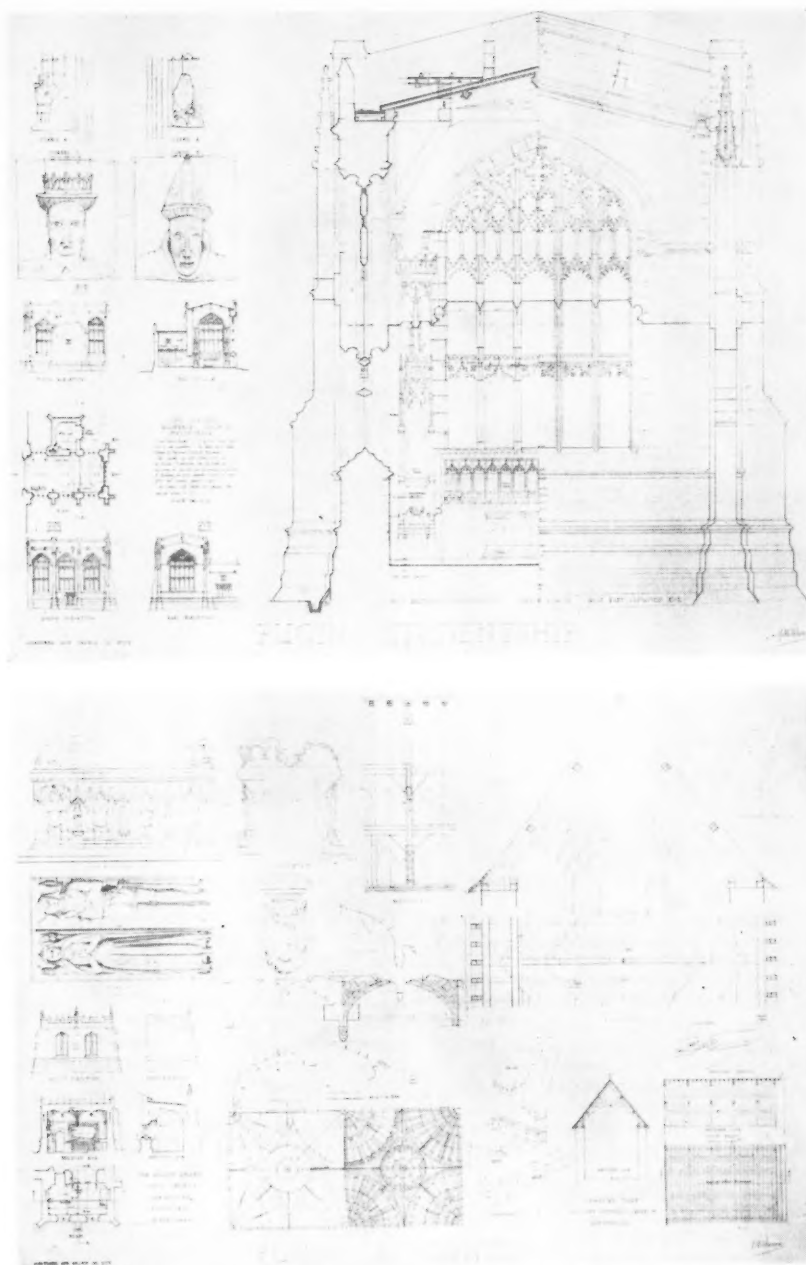
In their report the Jury said: In general the essential problems of access, car parking and internal circulation which must form the basis of such a programme have been very badly handled by almost all competitors and in several schemes the seating arrangements do not comply with any known building regulations in this country.

To this I would add, if ever a scheme had to work this had, and while some competitors' schemes worked in parts, not one offered a fully harmonious working solution. Apart from this the architecture did not reach a high standard and creative thought undoubtedly suffered from close proximity, in time and space, of a very distinguished solution to a similar but much larger scale problem in an entirely different setting. Examples of the lack of certainty

investing competitors' approach were the repeated use of the elephant in a 'Mies trap' theme; the insertion in one design of two silly little staggered boxes with bent fronts—they won't make a Royal Festival Hall—and the indiscriminate clothing in curtain walling of many diverse functions, further study of which could have been used to impart character. If this latest technical gimmick goes on gaining ground I can imagine the old joke about doctors burying their mistakes being paralleled by a new one, 'but architects wrap theirs up in curtain walling'.

The Owen Jones Studentship. This year the Jury welcomed a much higher standard of all the entries for this very important studentship. Even the entry by GRATIANO which is unplaced would in previous years have been equal to winners or near winners. As always, observation of colour in architecture is sharp and sensitive, but the lessons of such observations when carried out in the students' own work are disappointing.

An exception to this general experience of the Jury in recent years is the work of this year's winner, Mr. Kenneth A. Williams, whose design for a small cemetery chapel, though modest in scale (or perhaps because of this modesty) has managed



The Pugin Studentship. Two of the four drawings by the winner, J. M. Warnock [Student]

to illustrate, sensibly and clearly, the reasons behind his choice of colour, reasons that have been strengthened by his own observation. His colour notes gathered from many parts of the world are excellent and show lucid analysis as well as a sensitive eye. The Jury particularly welcomed the way in which this Student had related all his studies and notes directly and critically to Owen Jones's principles and congratulate him on an outstanding entry.

In conclusion the Jury continues to regret

that insufficient attention still, in their view, seems to be paid to the contribution to and the effect both of climate and light, natural and artificial, upon all colour problems.

The Essay Prize. This year the Jury decided not to award the Essay prize, but to give certificates of honourable mention to the essays submitted by Peter Kilby and Mr. Maurice J. Brown. Here is what the Jury has to say about the essays.

Of Mr. Kilby's essay on the work of

Jean Tijou: 'A work of historic value showing evidence of considerable research, sources are not given in every case, and one would have hoped that Mr. Kilby might have taken further his studies in the French sources. Written in simple well-phrased English which carries the reader along with sustained interest. Presentation excellent.'

Of Mr. Brown's essay on 'The Architectural Revolution' the Jury says 'an interesting view of the architect as creative leader in a revolution analogous to the agrarian and industrial revolutions of other centuries. The problem of recruiting the "best brains" to architecture is arrived at rather late and is insufficiently discussed. A work of rhetorical exhortations to all and sundry to act in concert to achieve vaguely defined contemporary architectural expression. Written with gusto; repetitive in argument; neatly presented.'

To add to those wise words I would suggest that future essayists should really concentrate on word pictures rather than drawings to develop their thoughts. Some of this year's entries were annoyingly interrupted by pictorial illustrations frequently very scrappily prepared.

The Grissell Gold Medal. Here is a competition which has perhaps been overtaken by events, inasmuch as the design and construction processes are mixed up on the drawings, producing not only confusion in the Jury's impressions, but confusion in the authors' minds. Perhaps in future the programme might be written around a design of spaces for which a sympathetic construction design is required. Alternatively some of the lessons arising from the recent Symposium on Drawing Office Technique might be noted and the competition conditions reviewed in order to inspire fresh ideas on production drawings for building.

Editor's Note: Mr. Grenfell Baines's comments on several of the unplaced entries have been omitted from this report. We will send on request to any competitor who was unable to be present at the criticism a copy of Mr. Grenfell Baines's comments on his entry. Competitors should state the pseudonym they used as well as the competition.

VOTE OF THANKS

Sir Stephen Tallents, K.C.M.G., C.B., C.B.E. [Hon. A]: I was much honoured when I was invited to come and move this vote of thanks—much honoured and quite a bit daunted, for only those who were responsible in this Institute know how very thin are the qualifications which led to the honour they did me, much to my surprise but greatly to my delight, in electing me, some years since, as an Honorary Associate of this Royal Institute. I had to think what qualifications I could assemble, and the nearest I could come to them was a great grandfather who was a builder and a great great uncle who was an architect! It is true that many of my best friends have been architects, and I think that one or two architects—some unfortunately dead

now but others still living—in fact influenced me more than any other men whom I have met in the course of my life.

Now I have the honour of proposing a vote of thanks to the President for his address and to Mr. Grenfell Baines for his appreciation. Of the President's address it would be impertinent of me to say much more than that it was worthy of his achievements and the high office which he holds in this Royal Institute.

Of Mr. Grenfell Baines's appreciation, he told us that all his brightest thoughts came to him when shaving, and I could not help thinking as I listened to that very full treatment of his subject that he must have used a good many razor blades in the course of its preparation! I do not know whether he knows that in the selection of his shaving moments for that purpose he is supported by A. E. Housman, the author of *The Shropshire Lad*, for in his famous Leslie Stephen lecture on 'The Name and Nature of Poetry,' Mr. Housman, recalling the remarks of Eliphaz and Temanite 'A spirit passed before my face: the hair of my flesh stood up', remarked that 'Experience has taught me, when I am shaving of a morning, to keep watch over my thoughts, because, if a line of poetry strays into my memory, my skin bristles so that the razor ceases to act. This particular symptom is accompanied by a shiver down the spine.' Evidently there is a sympathy between architecture and literature which our speaker tonight has discovered. All I can say is that having listened to that critique, packed with thoughts and packed with facts, I shall reserve it for my razor tomorrow morning when I shall attempt to get a full view of it!

He entertained us with his slides and records. I liked myself the moment when he imparted the advice to the young architect—and I am no judge—on how he has to approach his making of the plan of a particular building. I only noticed one omission in his talk, and that was did he comfort those who had failed in the competition? I can only say that there came into my head the comfort which the late Sir Walter Raleigh once produced—I do not know on what occasion—for those who had entered a competition and failed to win. It was that the nightingale won no prize at the poultry show!

With that last word to the unsuccessful competitors, and perhaps a word of congratulation to those who produced the delightful drawings which we were privileged to see upon the screen, I move a hearty vote of thanks first to the President for his address, and then to Mr. Grenfell Baines for his appreciation.

Mr. Howard V. Lobb, C.B.E. [F]: It is a very proud occasion for me, Sir, to have this opportunity of seconding the vote of thanks to yourself and to my dear friend Grenfell Baines.

You, Sir, referred at the outset of your remarks to the changing pattern in architecture, and I think what we have heard tonight is a full measure of that changing pattern. I think that you, Sir, in your few well-chosen words mentioned not only this

changing pattern but the reward of architects and architecture. I think that you should know that all of us very much appreciate the work that you do for this Institute and the inspiration which you have given us. It must surely be a very great reward to you as you look back and see some of the things which have been achieved, and in your practice of going in and around those great schools and other works which you have created, to see the happiness that comes to the people who live and work in them. That I think is a far greater reward than can be obtained in terms of pure finance. Therefore, I thank you, Sir, for those inspiring words.

As to George Grenfell Baines, I can only say thank God he has not got a beard! Really, this Dobson and Young act! I wonder what has happened to that piano? The whole idea of having this recording in trying to put this over is really just a part of his way of life and a part of the experience which he passes somehow to all the work he tackles. I cannot help thinking that what he has said tonight is really made up of that sincerity, character and experience which goes into his work.

I have very pleasant memories—I am not sure that he has the same—in connection with that theory to which he referred of balance, because I once took George sailing! It was small boat sailing and with his toes tucked in the toe strap and leaning as far as he could over the gunwale, we sailed backwards and forwards. He did not practise those ideas of balance then about which he has spoken tonight! At any rate, that balance he has mentioned is part of his way of life and goes into his make-up.

I can speak perhaps with a little experience of this, because two or three years ago I was a Critic. I know what it means, and despite the self-effacing way he has tonight passed all the good things on to the Jury, and the way in which he has spoken for the Jury, I think those of us who know him know that he has contributed to that Jury's work immensely. Therefore, I would just like to underline, if I may, by way of conclusion, one or two points he raised which are really all part of his way of life.

'Know yourself. Try in these plans of the work you are creating in fact to go through the very design.' I said much the same thing three years ago when dealing with a railway station, and I commented on the enormous sums of money which are spent every year in road safety precautions in this country; yet in one railway station design in order to buy a ticket it was necessary to run in front of a taxi rank and a bus station, and probably get run over by one of the fleet of trucks going to the parcels office! In another design, if you wanted to buy a bun and a cup of tea, it was necessary to go up a 3 ft. 6 in. spiral staircase! Other Critics have made similar comments, and year after year we ask all of you to try and live your design. I would emphasise that again and suggest that perhaps when you are shaving you might memorise these things, go through the various facets of them, so that in due time you will produce the quality of architecture which is worthy

not only of your clients' regard and the regard of this Institute, but maybe of the Critic's appreciation as well.

I have very great pleasure in seconding the vote of thanks to you, Sir, and to Mr. Grenfell Baines.

The President: At the expense of keeping you a few moments longer, perhaps you will allow me to say a word or two on two counts. First of all, I should like to thank Sir Stephen Tallents and Mr. Lobb for their kindly references to whatever I said and, secondly, to add my tribute to Mr. Grenfell Baines.

With all due respect to others in the past, I think we have tonight enjoyed perhaps the best critique that anybody has ever heard in this building. I feel that to be true, because instead of in some cases rather severe criticism of actual designs, we had Mr. Grenfell Baines's way of life or 'How to become an architect'! I liked it immensely, especially as it represents what I feel about it.

I refused to read his critique beforehand. I do not like reading papers before they are delivered. I prefer to sit and listen to them at first hand, and I am sure tonight we have had a most inspired address from Mr. Baines. I look upon him as one of the leading lights in what, for want of a better expression, one would call our new architecture, or the proper way to look at it, and that is the difference between the stuff done in the 19th century and the kind of stuff we are trying to do now.

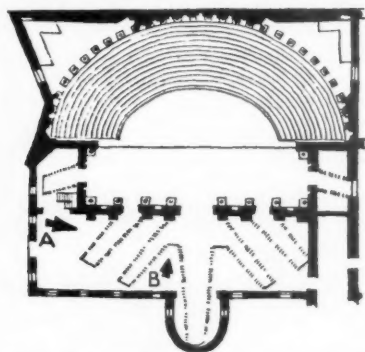
Instead of having a vote of thanks addressed to me for the few things I said, it has been a great privilege to be in the chair. I do not think that I shall follow this shaving example, particularly tomorrow morning, because when this meeting is over I am going to Scotland and I shall be shaving in a rather rocky train.

I have enjoyed this evening immensely, and I am very grateful to the proposer and seconder of this vote of thanks and, indeed, to everybody here, but particularly to Mr. Grenfell Baines for all the work he has put into the words of this admirable critique.

Mr. G. Grenfell Baines: If I may second the President's vote of thanks for the vote of thanks, I should like to say how grateful I have been to him for being the Chairman at this meeting, and to say what a pleasure it has been to be able to do this job while he has been President.

I should also like to thank my partner, Mr. Hargreaves, who has borne with me, along with friends at the B.B.C., while we took our recordings, and thank all the competitors as well. I think that we owe a great debt to those who take the trouble to enter the competitions each year for, after all, without their efforts you would not need a critique, and although it is nice to look back on the experience having gone through it, it is a great pleasure to sense—and I do sense—the appreciation that all of you have, which brings us back to where we came in. That is, thank you all very much for receiving the critique so well.

The Teatro Olimpico, Vicenza



Plan. The sketch on the cover of this JOURNAL is from point A, the sketch on the right from point B

THE SKETCH ON THE FRONT COVER of this JOURNAL, by Mr. Richard Leacroft [A], is of the back of the permanent scenery which was designed by Scamozzi and erected in 1585 and which has remained unaltered and is still used. The illustrations on this page amplify and explain the cover drawing. Mr. Leacroft has supplied the following note:

The stage scenery of Palladio's Teatro Olimpico was designed by Scamozzi to form a permanent architectural background of street vistas backing the openings in the 'frons scenae' of the theatre.

Solidly constructed of timber and plaster, each street is built in perspective and terminates in a painted panel which continues the perspective vista. The floor of the scenic area is raked up to help the



The front of the scene in use

illusion of perspective, a feature which was inconsistently retained in later theatre designs where actors moved amid the scenery. In this theatre children were, and sometimes are, dressed to represent adults and were then used to provide some life to this scenic background to the main action on the stage proper.

This three-dimensional painted scenery is seen against a cyclorama, or plaster sky dome painted to represent sky and clouds, and was originally lit by numerous small oil lamps placed on small brackets at strategic points. Some of these lamps remain to-day on their brackets which can



The back of the scene from point B on plan

be seen on the up-stage returns of the scenery.

That theatre and scenery should have survived both fire and war over the centuries is little short of miraculous especially when comparison is made with the ill-fated Teatro Farnese at Parma. The Teatro Olimpico and its scenery are still in use to-day for annual festivals and other theatrical productions.

Correspondence

OFF-PEAK ELECTRICITY FOR HEATING

The Editor.

Sir,—In your editorial of the December issue of the JOURNAL you comment on the lack of use of off-peak electricity for heating; it may surprise you to hear that Her Majesty's Government definitely discourage it. Commercial firms may install the necessary apparatus but for blocks of flats or private residences the electricity undertakings are prohibited to sell the equipment or to grant the rebate for off-peak user.

Yours etc.,

F. HALLIWELL SHANN [F]

Editor's Note: We submitted a copy of Mr. Halliwell Shann's letter to the Central Electricity Authority. Mr. W. J. Hendry, Deputy Public Relations Officer, replied:—

"The Central Electricity Authority and the Area Boards do their best to encourage off-peak supplies and, although it is true that all the Boards have not yet published tariffs for such supplies, all of them are prepared to offer terms for such supplies in

suitable circumstances. I should add however that an off-peak supply is likely to be of value only to a fairly large consumer. Because of the cost of the additional equipment required to give the supply, no financial advantage would probably be derived by the consumer until considerably more than 2,000 units were taken at the modified rate.

"The Area Boards have in fact taken an increasingly active part in promoting the use, not only of storage space heaters, but of other methods of off-peak electric heating, such as electric floor warming. The decision that, at any rate for the time being, storage space heaters, while free of purchase tax, should only be available for industrial and commercial premises, is not of course in the hands of the Central Authority or the Area Boards. It is hoped that the Chancellor of the Exchequer will modify this situation as soon as possible, so that this type of appliance may be available free of purchase tax for use in all types of residential premises."

PAINT COLOUR RANGES

Sir,—In the review of the Building Exhibition published in your issue for

December 1955 I was surprised and disappointed to note that your reviewer made no mention of one exhibit on the B.R.S. stand which is the direct outcome of design initiative taken by the R.I.B.A. Instances of this initiative are too few, and cannot afford to go unmentioned whenever the opportunity occurs. I refer to the British Standard colours for building and decorative paints.

Yours faithfully,

D. L. MEDD [A]

Editor's Note: While it is true that this work was on view at the exhibition, the official 'launching' of the scheme was not to take place until the holding of a press conference by the British Standards Institution on 27 January. We felt it to be premature to mention this matter in our report on the exhibition, especially in view of the fact that we propose publishing a full length descriptive article nearer the time when the printed colour cards will be available to members.

Owing to pressure on space in this issue of the JOURNAL we regret that we have had to hold over some letters until the next issue. Ed.

Precast Concrete in Framed Structures

Some Observations on Recent Practice

By Eric S. Benson, M.B.E., Dip. T.P. [F]

A GREAT DEAL has been written in recent years regarding the use of precast concrete, both as a structural material and as a method of cladding buildings. Experimental buildings have been erected embracing both types of precasting, often under the sponsorship of the larger local authorities; but these buildings have usually been of a specialised character and of a type not often associated with the normal private practice of architecture in the more urban areas. Prominent among them have been school buildings on open sites and other low buildings of fairly light loading.

While these experimental buildings serve a useful purpose and solve some particular problem, they tell little to the architect who may not be directly concerned with their erection that he could apply to the more orthodox problems with which his practice may be concerned. Some critical and comparative comment is necessary if the majority of the members of the profession, unable to experiment on their own behalf, are to be given the information and the guidance which must precede any general application of this new form of construction. In the following article the author is endeavouring briefly to summarise, from his observation of contemporary concrete structures, the points which appear to be the essentials that must be appreciated before the benefits that are to be derived

from the precasting of concrete can be generally applied. The material is considered primarily in its application to multi-storey structures on urban sites.

Types of Structure. The basic structure of nearly all multi-storey buildings is now a frame. Load-bearing cross-wall construction is applicable only in the case of flats and similar buildings where unbroken transverse walls are available at regular and reasonably frequent intervals. When this type of construction is applicable there is now little doubt that it will form the most economical solution. The restrictions in planning offered by the unbroken cross-walls at frequent intervals are however considerable and there are few types of buildings other than small flats and maisonettes where this form of construction can be easily applied. In any building which does not consist of a regular series of cross-walls the choice between steel and concrete frames is usually the first decision.

Steel is scarce and the position is not likely to improve. Under the new model bye-laws, structural steel must be encased in concrete as a fire precaution and one is obliged to erect what is in effect an in situ concrete frame to encase the steel frame. The mass of concrete required to do this is little short of that which would be required for a concrete-framed building of

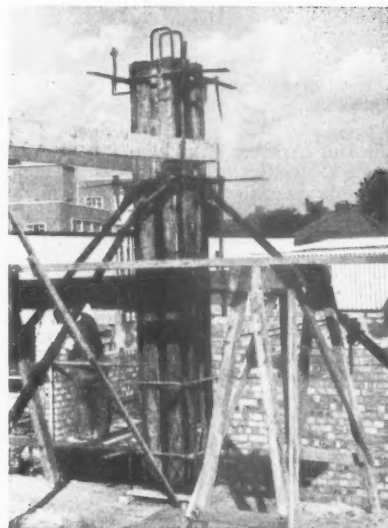


Fig. 1. Sheet piling and supports for a column cast in situ at the new accounts block of John Laing & Son, Ltd.

similar loading. In such circumstances the concrete frame would show a financial saving of anything up to 30 per cent against an orthodox steel frame encased in concrete. Furthermore the casing of the steel involves the in situ casting of beam and column casings and thereby attaches to steelwork the wastage and the time lag which has been associated with in situ concrete work of post and beam construction.

In view of these facts, attention has been the more directed towards reinforced concrete and to the possibility of using methods of erection which would avoid the delays and the wastages of in situ construction, and the experimental buildings referred to at the beginning of this article are part of the evidence of this situation.

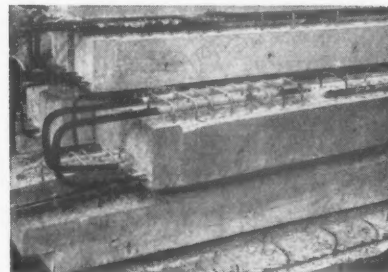


Fig. 2. Precast beams awaiting erection. John Laing & Son, Ltd.

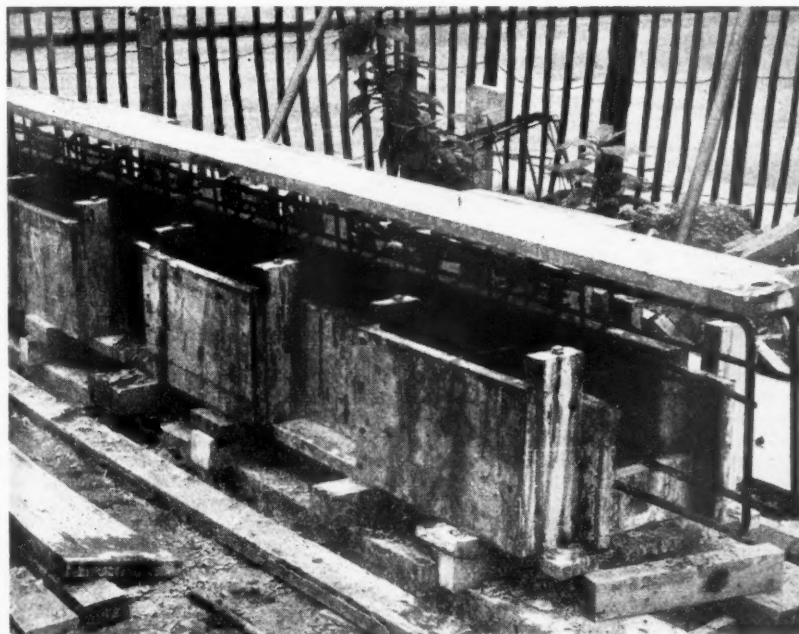


Fig. 3. Mould for precasting beams on the Picton Street site. John Laing & Son, Ltd.

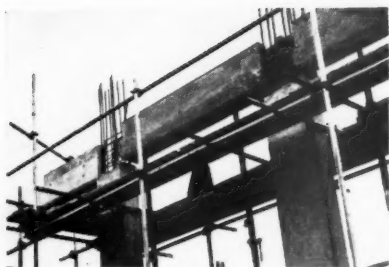


Fig. 4. Erecting precast beams on the Picton Street site

In Situ Concrete Frames. It has been the general practice in concrete-framed buildings to make the floor and beams monolithic so that the floor itself forms a compression flange for the beams and also results in a saving in headroom and of materials. The disadvantage of this method is that it has necessitated the simultaneous pouring, in situ, of both beam and floor. This in turn has led to the use of complicated shuttering with wastage in re-use, obstruction to movement and delays associated with the drying out period and the re-erection of the shuttering. We are all familiar with the forest of supports and the large amount of timber sheeting required by the usual in situ beam and floor and in the minds of many the delays caused by this form of construction have been considered sufficient to warrant any reasonable additional expenditure on steel.

The application of precasting techniques to the concrete frame have indicated that these disadvantages, long associated with in situ concrete work, can be avoided and that the old assessment of the relative merits of steel and concrete frames are tending to be revised on this account.

Precasting the Concrete Frame. The questions relating to the precasting of a structural frame can be simplified broadly under the headings of 'column' and 'beam'. Both need shuttering that must remain in



Fig. 6. In situ balconies in flats, Loughborough Road



Fig. 5. Floor construction in high flats near Paris. Architect: Denis Honegger

place until the casting is self-supporting, and the shuttering must be strong enough to support the wet concrete without deflection. At this point however the similarity ceases.

In the case of a column the shuttering required to carry out the above functions is relatively simple and it would not vary to any great extent whether the column was precast or cast in situ. Even with an in situ casting the shuttering is simple in design and the wastage in re-use is negligible. Fig. 1 illustrates the shuttering required for an in situ column and its supports, and it will be obvious that the labour required to erect and to strike such shuttering is small. Considering the question of casting the columns solely from the point of view of shuttering problems, there can be little, if anything, to recommend the use of precast columns.

When we consider the vertical members of the frame from points of view other than shuttering problems, however, the arguments in favour of retaining the in situ vertical member are considerable. Continuity can be achieved simply by the bond stress given to the projecting reinforcement when the second stage is cast. The length of bar that must be left projecting to achieve this is not unmanageable even with rods of 1 in. diameter. On the other hand, if we try to precast the vertical members of a multi-storey structure the production of a satisfactory joint in these members is a complicated operation. Reinforcing rods must be welded or bolted to connecting plates and a section of the column must be left open so that the reinforcement may be jointed. Afterwards this small section must be filled with an in situ connecting length of concrete and provision must be made for supporting the upper section of the member while this joint is being made. The placing of the concrete in this joint, closed top and bottom by the precast sections, is not easy.

When one remembers also that some sheeting is necessary to make the connecting joint, and that the upper section of the column cannot be loaded until this in situ joint has set, there seems to be little to be said in favour of precasting the vertical members of a structural frame.

One argument that is advanced in favour of precasting vertical members is that construction may thereby be made more rapid. This appears doubtful for several reasons, one of which is the setting time required for each joint. A less direct argument is that buildings, apart from standard proprietary structures, are just not organised to the degree that the external cladding would be ready and waiting for the frame at each floor level. If both are precast some parts must receive preference in mould-making and in casting and this preference would inevitably fall on the structural units. Indeed, with in situ verticals in progress on the site while horizontal and cladding units are being cast simultaneously elsewhere, improved progress is more likely to be the result.

The horizontal members of the frame, whether beam or slab, present a very different problem. Beams develop considerable bending moments on the shuttering during the period when the concrete is wet, and these moments can be the more easily counteracted when the shuttering is on the ground than when it is suspended 10 or 12 ft. in the air. The in situ casting of heavy horizontal members leads to heavy shuttering and a large number of props both for the beam casing and sometimes also for a working platform. The self weight of the beam is such that a fair amount of set is needed before the shuttering can be removed, and the re-erection of the sheeting in a new position involves wastage of material and loss of time.

The precasting of horizontal members avoids the delay and the wastage, and both the casting and the erection of the precast members are relatively simple matters.

Beams may be cast with projecting reinforcement as illustrated in Fig. 2, and the in situ joint with the cast in situ column will satisfactorily tie in this reinforcement to form a monolithic unit. Fig. 3 shows the simple type of rough mould that would be satisfactory for the site casting of such horizontal members, and Fig. 4 indicates the simple method of supporting the precast horizontal member while the in situ connection is made.

One should compare the work involved in precasting a series of beams on the

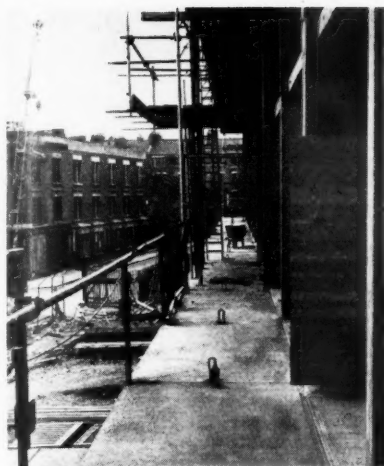


Fig. 7. Precast balconies at Picton Street

ground and erecting them by the method indicated in Fig. 4 with the process of casting a similar series of beams in situ 10 or 12 ft. above any available support and perhaps five or six times this height above the mixer. In contrast with the column, the arguments in favour of pre-casting the horizontal members are considerable.

It is usually regarded as an essential point in framed concrete structures of several floors that the floor slab shall be monolithic with its supporting beams. This does not present an insuperable problem and can be achieved by precasting beams at closer centres and with projecting stirrups. In the new high flats near Paris, Denis Honegger has used the simple method illustrated in Fig. 5 to achieve this result.

In the above method, precast supporting beams are fixed at relatively close centres and these are holed to receive short lengths of steel rod which in turn support the sheeting. The beam reinforcement, shown projecting, is used to tie the beams to the thin in situ floor, which is cast overall. When this has set, the short rods are knocked out of the holed beams and the simple sheeting is free to fall away, ready for use in the next section. The precast beams support the in situ floor and no shuttering in the usual sense of the term is needed.

The precasting of horizontal members, both beam and floor, would appear to be a logical and almost inevitable development on multi-storey concrete structures in the future. It is not only economical in itself but leads to saving in time in comparison with an in situ structure of similar type.

Other Advantages of Precasting. The pre-casting of horizontal members, coupled with judicious planning, can also save much in indirect ways which are beyond the scope of this article, but one rather striking example is illustrated in Figs. 6 and 7. Fig. 6 shows the balcony of a multi-storey block of flats of orthodox in situ con-

struction. The obstruction offered by the supports is obvious and the difficulty in delivering materials to the various floors through the mass of scaffolding can be imagined. The cost of this scaffolding, standing round the building month after month, will undoubtedly amount to a considerable sum.

In comparison with the above, Fig. 7 illustrates a similar view of another building of almost identical type where the balcony supports and the balcony slabs have been precast. A simple guard rail has been fixed to the balcony supports and the front of each maisonette will be prefabricated and erected from the projecting balcony. In this case the entire balcony has probably been constructed for less cost than has been occasioned in the previous example by the cost of the scaffolding and by the losses incurred through delays and inconvenience. This comparison serves only to offer to the architect the hint that savings in cost can begin even when considering the sketch elevations.

Concrete Cladding. The question of using concrete as a facing material in its own right has raised many problems and almost as many divergent points of view. The principal of one of the smaller reinforced concrete firms in the north recently remarked to the author that, while he had been associated with selling concrete all his life, he had not yet reached the opinion that it is a suitable material to expose to the climate of this country without adequate protection. Many share this view. On the other hand, buildings are now being erected with concrete exteriors and our journals carry many illustrations of buildings completed in this way, and also advertisements for proprietary structures using concrete as a facing material.

The possibility of using concrete, cast in situ, as the facing material has been examined and discussed at length in the technical press but the architect does not, generally speaking, welcome large flat areas of a dull grey colour, whatever its quality might be from the structural aspect. When



Fig. 8. A mould for a section of staircase. Wates Ltd.

this rather drab appearance is coupled with the very considerable problem of achieving on the site a mix that will satisfactorily resist the attacks of the weather, the result is that the use of cast in situ concrete as a facing material has relatively few supporters in this country.

Attempts have been made to improve the appearance, by bush hammering for instance, but this process is costly and likely to produce as much in the way of deterioration in the weather-resisting properties of the concrete as it may add to its aesthetic appeal.

If concrete facing slabs are precast, preferably under workshop conditions, the mix can be properly controlled and supervised, and it can be efficiently vibrated to ensure a compact material. Concrete produced under these conditions can be of a quality sufficient to resist the climate of this country, and it would seem that concrete kerbstones and roofing tiles have been demonstrating the fact for some years. With workshop precasting, moulds can be efficiently cleaned, exposed aggregate techniques fully exploited and a consistently dense material guaranteed. There are however a few basic facts that ought to be appreciated by any architect contemplating the use of this relatively new technique.

Moulds. Most of those who are not directly concerned with the production of precast

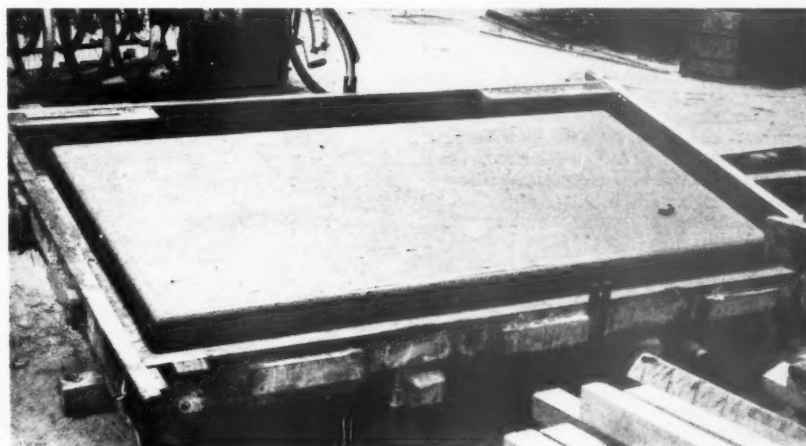


Fig. 9. A mould cleaned ready for re-casting. Wates Ltd.

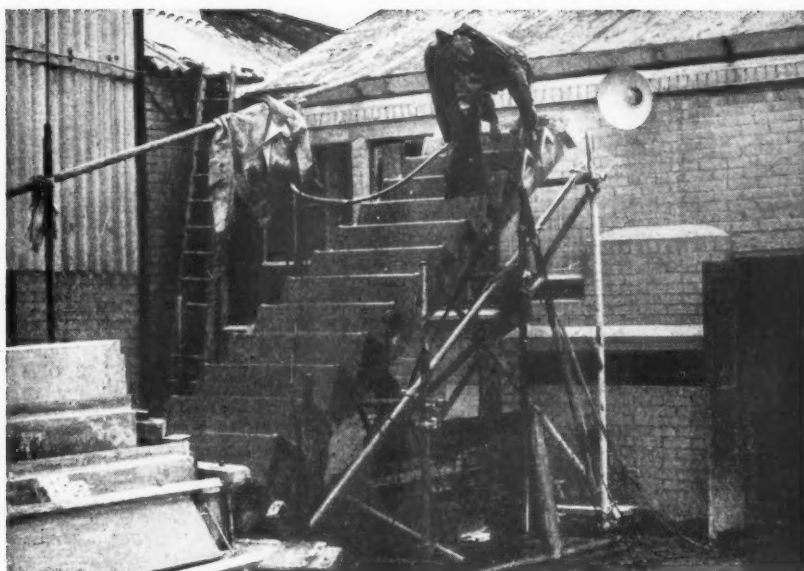


Fig. 10. Cleaning a flight of stairs after casting. Wates Ltd.

concrete sections find it difficult to realise the rigidity that is required from the mould if a satisfactory casting is to be produced. On reflection we all know that the weight of wet concrete in a casting is considerable, even with a casting of moderate dimensions, and we are equally aware that if an exact size is to be produced there must be no deflection of the mould while the concrete is wet. It is nevertheless a fact that most of those seeing the actual process for the first time are surprised at the size and quality of the timber used in these moulds and also at the quality of the workmanship. Fig. 8 illustrates part of a mould for a section of staircase from which the quality of workmanship and the sizes of the timbers can be appreciated.

The point cannot be too strongly emphasised that for exposed facing slabs or frames both workmanship and timber should be beyond reproach. No adjustment can be made satisfactorily to the finished product and the errors will be produced in all the castings. Such moulds are costly and would vary from about £40 to £80 for a fairly complex casting of moderate dimensions.

Timber moulds deteriorate from the first casting and the amount of further casting depends to a large extent on the efficient cleaning of the mould. Such is the history of precasting in this country that an untrained workman would probably select a shovel as the most suitable tool for cleaning the timber mould, and close supervision of the cleaning processes is an essential. It is also an argument in favour of workshop casting rather than casting on site, at least for the visible elements.

A clean mould, ready for a second casting, is illustrated in Fig. 9 and should be compared with the rough mould used for sitecasting a structural element illustrated in Fig. 3.

While repetition depends to a large extent on efficient cleaning it is, in any case, not likely to exceed 25 to 30 castings. The cost of the mould may therefore be expected to be between £2 and £4 per casting, except for the simplest elements, even when fully used and efficiently cleaned. In many cases it could be a higher figure.

Metal moulds can be manufactured but at nearly twice the price of timber, from which up to 200 castings might be taken, but this number of identical units is unlikely in the individually designed building of moderate dimensions. It is however a strong argument in favour of standardisation, favoured by the manufacturers but not so readily accepted by the architect.

Design of Castings. The second point that should be appreciated is that the castings receive a considerable amount of handling and are expected to be fixed in position without damage. Moulds are filled, vibrated and then stored for a short period. After the mould has been struck the casting has to be cleaned, removed to a storage area, loaded on to a lorry, unloaded at the site and finally hoisted into position. To illustrate some of the difficulties in this connection, Fig. 10 shows the cleaning of a precast flight of stairs for which a special scaffolding has had to be erected. It will be appreciated that the handling of the castings is a problem in itself.

While this represents an argument for smaller units, it is equally evident that the smaller the unit is, the more site work will be necessary, and this is one of the things that precasting is designed to avoid. As in most things a compromise is necessary and it would seem that castings ought not to exceed about 30 to 40 sq. ft. in overall area or about 30 cwt. in weight as a general rule. One should also try to envisage the actual filling of the mould when designing the unit



Fig. 11. Filling a mould. Wates Ltd.

to be precast, and remember that in nearly all cases the process of filling the mould is complicated by the reinforcement that is required. An appreciation of these points, illustrated in Figs. 11 and 12, will lead to the avoidance of complicated sections which are not likely to be satisfactory or economically produced and which add considerably to the initial cost of the mould.

Costs. Precast concrete is not a cheap facing material and should not be regarded as such. In plain walling, such as the sill wall between floor and window, it cannot compete with 11-in. brickwork. The cost of the mould must be added to the cost of materials, labour in castings, transport, methods of fixing and, last but by no means least, the cost of the inner leaf of walling necessary for adequate thermal insulation. Multiple repetition of simple standard units is the only way in which precast concrete facing can be kept to a reasonably low figure at the present time, and this leads inevitably to the proprietary building offered for sale by manufacturers in standard designs rather than to the individual practice of architecture.

However, bricks and bricklayers are not always available in the quantity or quality desired, the 'time on site' factor may be of primary importance or there may be other reasons to consider. Architects themselves have been known to become most enthusiastic over sunlight glinting on pieces of glass aggregate and in such a mood may not be interested in the lower cost of 11-in. brickwork. We should nevertheless appreciate that if we are to use precast concrete in individual designs it is essential that we

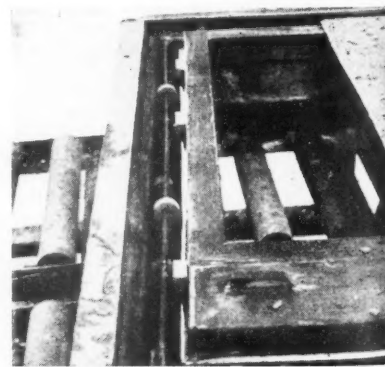


Fig. 12. Mould reinforcement. Wates Ltd.

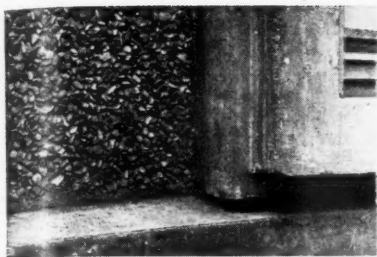


Fig. 13. Detail of the precast units at the Paris flats. Architect: Denis Honegger

should reduce the number of moulds to a minimum on any one building and that we should not design sections so complicated that the cost of the mould is materially increased and its life shortened by the cleaning processes.

On the other hand, since a timber mould would not provide more than about 30 castings without considerable repair, we need not think that large numbers of identical units are necessary to justify the use of the material. Over a dozen moulds could be made for under £1,000 and this is not a large item in a building of moderate dimensions if the cost can be justified by advantages in other directions.

Site or Shop Casting. If the use of precast concrete is contemplated, the question of whether the units are to be cast on the site or in the factory arises, and on this point opinions again appear to be very varied. There is the obvious advantage with site-casting that the handling of the sections is very much reduced, but equally obvious are the lack of the more efficient means of vibration, doubtful supervision and control of the mix and probably inadequate cleaning facilities for the moulds. Messrs. Wates, for example, appear to have a strong preference for factory-casting and carry out all such work at Bedford even when this means transporting over great distances. On the other hand, Messrs. John Laing & Son Limited are precasting on site at the Picton Street flats for the L.C.C., and Denis Honegger at the high flats near Paris is casting on site all horizontal members, window frames and cladding units.

It does seem doubtful whether the standard achieved by precasting on the Paris site would be generally acceptable in this country. Fig. 13 shows the junction between three precast elements on the Paris flats, a floor beam, a window frame and a cladding panel, and this illustration is typical of the standard that has been achieved throughout this work. It represents a standard that would not be easily improved by site casting, but it is a standard below that which is being achieved in the factory.

The general arguments would appear to be that, for structural members which will be hidden and where a high quality of finish is not required for aesthetic reasons or to combat the weather, there are few objections to be raised against site-casting except the amount of space that is required. Fig. 14 shows the space taken up on the



Fig. 14. Precasting on the site, Picton Street flats. Note the amount of space taken up

Picton Street site for casting floor units only. It is not often possible to give up such an area, especially on an urban site, and to attempt site-casting in a restricted area would only be adding to the difficulties already enumerated.

When the concrete is to be used as a facing material, the high quality of finish that is required and the need for thorough cleaning of the moulds between each operation suggest that such work is more likely to be carried out successfully if undertaken in the more controlled atmosphere of the workshop.

Summary. Applying the above observations to the construction of a multi-storey building of normal loads and of individual design, the conclusions to be drawn would appear to be as follows:—

1. On the grounds of cost a steel frame is at a disadvantage when the precaution of casing in concrete is to be applied. The casing of this steel also introduces the disadvantages of in situ concrete work in horizontal members which have been discussed.
2. Concrete frames are now likely to be the more economical alternative to steel, but if cast in situ they are subject to delays in erection and they are usually costly in their requirements of shuttering. They can however compete to their advantage with steel encased in concrete, in both time of erection and in freedom from obstruction if precasting methods are adopted.
3. The precasting of vertical members introduces serious problems in multi-storey construction and does not appear likely to produce benefits to justify the method. On the other hand the precasting of the horizontal members, whether beam or floor, is a relatively simple process and shows

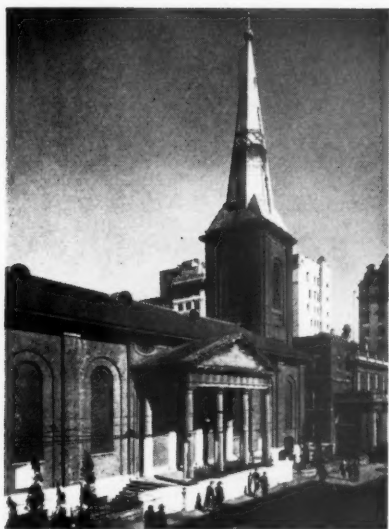
many advantages over the in situ counterpart.

4. Precast concrete may be effectively used in cladding units but cannot yet compete in cost with traditional brickwork. The cost can be kept to a reasonable figure if attention is given to simplifying the casting and if the processes of precasting are appreciated and this knowledge properly applied in design.

5. Precasting on the site is only advisable for structural members and then only when ample space can be devoted to this work.

There is little doubt that great developments are taking place in the use of concrete and that this state of affairs will continue. Structurally it is now the cheaper frame in the majority of multi-storey problems and by precasting the horizontal members the old delays and wastages associated with in situ concrete work can be avoided. As a cladding material we must, above all, avoid any tendency to regard concrete as the 'cheap alternative' to brickwork and give to it the thought and research that a material with such potential uses demands.

The material as used today in cladding becomes reasonable in price only by reason of simplicity and continuous repetition. Architects must learn to understand the techniques involved and keep their mould requirements to a minimum if they are to compete in the use of precast concrete with the standard proprietary building. So far the standard proprietary concrete building has been confined mainly to single-storey structures or low buildings for special requirements, but there are signs that the manufacturers are becoming more ambitious in this direction and that their experiments are likely to prove successful.



St. James's Church, Sydney (1822). Architect: Francis Greenway.

Architecture in Australia Exhibition at the R.I.B.A.

THE AUSTRALIAN HIGH COMMISSIONER, Sir Thomas White, is to open this exhibition which has been prepared by the Royal Australian Institute of Architects and from

which we reproduce some photographs. It will be open to the public from 29 February to 24 March inclusive from 10 to 7 p.m., Saturdays 10 to 5 p.m.

The exhibition deals briefly with the early colonial and gold-rush eras, proceeding through Federation and two world wars; but its main emphasis is on the part played by contemporary architecture in the development of a continent's industry, power, irrigation, housing, schools and hospitals. It is essentially forward-looking, envisaging the immense programme of development which lies in the future of Australia.

An exhibition handbook is being prepared. It contains forewords by Mr. R. G. Menzies, the Prime Minister of Australia, the President R.A.I.A. and the President R.I.B.A.



Beulah Hospital, Victoria (1955). A 6-bed circular ward. Architects: P. and D. McIntyre.



Boathouse for Melbourne Grammar School (1953). Architects: Mockridge, Stahle and Mitchell.



National University, Canberra, Australian Capital Territory (1952). A residential building. Architect: Brian B. Lewis.



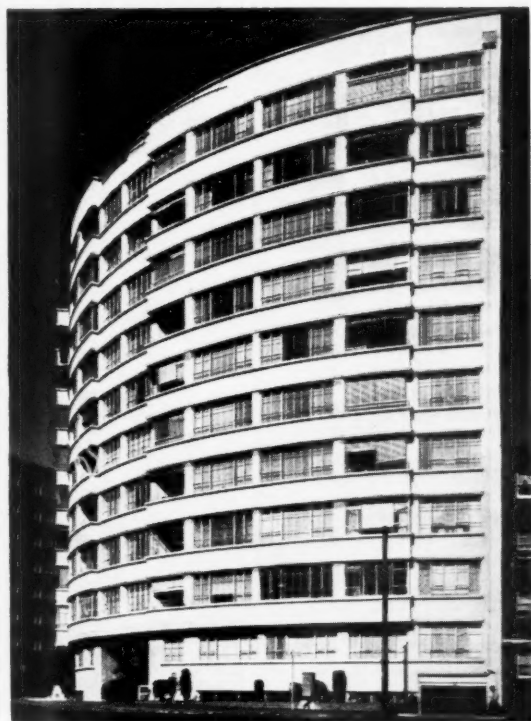
House, Broadbeach, Queensland (1953). The sun-deck overlooking the Pacific. Architects: E. J. Hayes and C. R. Scott.



Flats, Toorak, Victoria (1954). Architects: Grounds, Romberg and Boyd. Two-storey living room of a bachelor flat in a group of five.



Above: International Harvester Works, Dandenong, Victoria (1951). Architects: Hassell and McConnell. The administrative block. Below: Heinz Factory, Dandenong, Victoria (1955). Architects: Hassell and McConnell.



Above. Office Building, Sydney (1955). Architects: A. F. Blackwell and Stephenson and Turner. Top right. Classrooms, Melbourne Grammar School (1954). Architects: Mockridge, Stahle and Mitchell. Below. Flats at Potts Point, New South Wales (1951). Architect: A. M. Bolot.

Symposium on Drawing Office Technique

Held at the R.I.B.A. on 17 January 1956

Mr. Peter Shephard, B.Arch.(L'pool), A.M.T.P.I., A.I.L.A. [A], in the Chair

The subject was introduced by Mr. Michael Powell, B.A. (Cantab.), A.A. Dipl. [A], Assistant Housing Architect, L.C.C., Mr. Henry Elder, M.B.E. [F], Mr. W. F. Mullins, A.A. Dipl. [A] (deputising for Mr. Richard Sheppard, A.A. Dipl. [F]), and Mr. Gordon T. Tait [F]. The Discussion was opened by Mr. Peter E. Trench, O.B.E., T.D., Managing Director, Bovis Ltd.

Mr. Michael Powell said he had chosen the Roehampton Lane Housing Estate scheme for illustration as a good example of a large mixed development housing layout as carried out by the L.C.C. It contained 1,876 dwellings, 1,035 of which were in tall blocks of flats and maisonettes, and the remainder in low blocks of maisonettes and terrace houses. In a scheme of that size there were, of course, many buildings other than houses and flats, such as shops, primary and secondary schools, public houses, and in this particular scheme a church and a public library. Apart from the shops the Housing Division did not do any of the other buildings.

From the start the layout was conceived with a view to achieving as much standardisation of types of blocks and details as possible consistent with a proper architectural solution for that particular site. A system of central heating and hot water was essential for the tall blocks, and to achieve an economical installation those blocks were sited in three groups, served by a ring main system from the boiler house, which also catered for the schools. There were only five main types of building in the housing layout—12-storey point blocks, 11-storey maisonettes in slabs, 4-storey maisonettes, and some 3-storey and 2-storey terrace houses. There was also a small number of bungalows for old people.

In a scheme of that magnitude and with such a small number of different building types, there was obviously an opportunity for considerable standardisation of design and detail. Although the buildings were, broadly speaking, of traditional construction, the design incorporated many items such as windows and window panels, plumbing ducts, and services that could be multiplied several hundred times. That factor became evident when studying the working drawings. The tall blocks had internal bathrooms and w.c.s. which were mechanically ventilated.

The layout and preliminary designs had been prepared by a small group of four architects working under the guidance of the Architect to the Council, and the Principal Housing Architect. The scheme was presented to the Housing Committee in the following way: A large layout model was prepared by the model-making section in the Architect's Department. That not only showed the proposed housing blocks, but also the existing buildings on the site, the immediate neighbourhood, all natural features such as trees, ponds and contours and proposed buildings for other services such as schools. This model, together with a large coloured layout drawing, gave the

clients a good idea of the scheme as a whole and was also invaluable in discussions with other services of the Council, with the Borough Council and with the representatives of the local residents. The group themselves made a $\frac{1}{16}$ in. scale model of one of the large maisonette blocks. This was photographed and mounted on a photograph of the actual site where the blocks were to be sited. That gave a clear and accurate picture to the clients of what an important part of the site would look like when completed. All housing types were shown in $\frac{1}{2}$ in. scale design type plan drawings showing clearly the internal arrangements together with the placing of furniture and fittings.

As the site was available for immediate development, it was essential that the working drawings should be prepared with the utmost speed so that the quantity surveyors could prepare bills of quantities and the scheme could go out to tender as soon as possible. The programme was, therefore, very tight and the group had to be expanded considerably, at the peak period up to fifteen assistants. It was during that period that the considerable amount of standardisation in design paid dividends.

Group working in the design stage was encouraged and he thought should continue throughout the job. Naturally groups had their own ideas and so a certain variation in working drawing technique was to be expected. From the outset it was felt desirable to keep all the drawings to the same size and that size as small as possible. All working drawings were to Imperial size only and there was no doubt whatever that that factor had been a marked success. The drawings were easy to store in the plan chest, there was little danger of tearing, they were easy to locate and convenient to take on the site. Some members of the group clubbed together and bought a large typewriter which they used for lettering and figuring on the working drawings. Those members who were good typists were firmly of the opinion that the use of the typewriter saved considerable time. The typing printed well, but no better than ink lettering. Drawings were roughed out in pencil and traced in ink.

The general policy had been to make the drawings as full as possible. There were few 'diagrammatic' working drawings. Where very intricate services and a structure had been co-ordinated and where all ducts must be of minimum feasible size it was found that the only possible way to make certain that everything would fit was to draw the lot, every pipe socket, bend, etc. Where the duct was repeated several hundred times

that was time well spent. No full sizes were included in the drawings for the quantity surveyor, all building in and joinery being detailed to $1\frac{1}{2}$ in. scale, and all details kept as simple as possible. Most of the sections were very simple rectangular scantlings which could well be coped with to $1\frac{1}{2}$ in. scale backed up with the specification.

As the drawings were in ink, revisions and alterations could be drawn on the negative, erasures being made with a razor blade. The revisions were noted, dated, the revised print issued and a copy put in the office set. The old one was kept as a record of the job at an earlier date. The drawing register took the form of a card index file. Each type of block had a card giving full details of every drawing applying to that block. For example, the point block had its drawings divided up into the following sections: contract drawings, revision drawings, Clerk of Works sketches from the site, consultants' drawings and revisions, etc.

There was a standard specification that covered all housing work from which the architects could extract full specifications as applied to the particular job in hand. In the scheme under discussion, there being only five main types of block, there were therefore five separate specifications to cover them. From those specifications were extracted descriptions of work to apply to each of the five types. All drawings, including all those of the consultants, were issued through the section running the job.

Mr. Henry Elder explained that he had been concerned over a number of years in research and experiment on the subject under discussion. This research, carried out in collaboration with Mr. Enrico de Pierro [A] and Mr. Edwin Benroy [A], had been the subject of a Leverhulme Award.

He regretted that the time was not really opportune to present conclusive results from the research so that what he was about to say might be considered as an interim report on something about which he felt very strongly, and which so far had given every indication that it might be on the right lines.

The research had resulted in a questioning of procedure in the building industry. At first those concerned went from North to South inquiring from builders exactly what they felt about architects' drawings, and the position was found to be quite serious. Builders generally were complaining that architects' drawings were often late and that sometimes they were lacking in information; they pointed out that if the drawings were delivered on

time, a great deal of time would be saved on the eventual completion of the work. In other words, complete information was essential.

A further examination was made in order to ascertain whether any standard existed in architects' drawings, and great difficulty was experienced in finding one. The first problem was that a standard generally seemed to be dictated by the demands of local authorities with their administration problems rather than by any site requirements. The second was that details generally seemed to accord with a custom which might date back fifty or more years. Efforts were made, therefore, to approach the subject from a completely fresh angle. The view was taken that it was necessary to supply information which consisted of drawings or written information, and that the information must satisfy a series of different requirements.

The first was the client; the second was the local authority; the third was the quantity surveyor; and the fourth the site. Those requirements were so varied in themselves that the only two which seemed to fit together in any way were those of the quantity surveyor and of the site, and it was felt that if possible a common denominator should be found. That common denominator seemed to be a system whereby information could be supplied quickly rather than a common method of presenting drawings.

It was found that if information were to be obtained readily everything must be based on a standard sized drawing: foolscap size and multiples of it had been chosen. That was step number one. Then it was decided that in compiling drawings and documents complete prior information was necessary, and that no job would be undertaken unless all the information that was necessary could be provided before the job started.

On examination it was found that no clear decision could be reached on what was 'complete information', but it was agreed that there was no desire to make mistakes. Everybody felt the need to get away from mistakes—which might be large or small. Yet on looking into the matter it was discovered that errors crept in in spite of efforts being made to eliminate them and that these must be accepted. There were errors which the architect made on the drawings and which the builder was always very keen to point out! There were also errors which the builder made on the job which the architect had to find out!

An experiment was carried out in order to find out the number of errors that people made, and in that experiment people worked for 8 hours continuously, without stops for meals at all. They started off making 2 per cent errors; after the first hour they made 1 per cent errors and after 8 hours as much as 5 per cent errors, though these were mostly small.

How was the question of errors to be dealt with? Obviously the answer to that was simplicity; so endeavours were made after the preparation of drawings to evolve a system which was a complete system

and not a half-baked effort. Efforts were made to organise the job so that it was possible step by step to see exactly what went on, and three columns were drawn up headed 'Operation', 'Materials' and 'Drawings Required'. It was found that by approaching the subject as a general foreman would approach it, there was a list of drawings at the end in order to explain exactly what was wanted.

The drawings were therefore divided into trades. That meant that the sequence found on the job was not necessarily followed, and there might be many drawings going at the same time; but they were small drawings. The advantage of this method was that one was doing what the foreman should do, and it was found that the quantity surveyor was particularly fascinated because his work had also been partially done for him. It was also found that a number of mistakes which had occurred before had been ironed out, and the staggering part was that as the job had proceeded fewer mistakes had been found. Mistakes were not eliminated altogether, but it was known that the mistakes which did occur occurred first of all in the office and not on the site.

It was also discovered that to provide trade drawings was not altogether as clear as had been thought in the office. Therefore 'assembly drawings' were instituted which were divided into three categories. There was first of all the category of key drawings, then that of detailed drawings, which set out as far as possible in trades exactly what was going on, and thirdly the assembly drawings which brought together some of the trades in order that the general foreman had a knowledge of what was happening. The individual trades received their drawings, but full size drawings were never provided until a profile was necessary for a particular piece of work. The conclusion was reached that information was more important than scale. The idea of putting together a great number of items in sequence was not altogether successful.

The result of all that was a foolscap-sized document which contained all the drawings except the specialist drawings, and an index in the front so that the builder could find the drawings that he required. It was interesting to note the various reactions to the document. On being presented with it for the first time one builder had said: 'Well, this is different and I reserve my judgment until the end of the job.' His foreman had said: 'You have given us a lot of homework', and the surveyor had said: 'This is what I have been waiting for for twenty years.'

Mr. W. Mullins apologised on behalf of Mr. Richard Sheppard who was unable to be present owing to another commitment. He explained that he was a partner in Mr. Sheppard's firm and had been largely responsible for evolving the system of working drawings used.

In considering what he had to say on the subject, he had decided to confine himself entirely to the kind of factual information which had to be conveyed to

builders, sub-contractors and specialist manufacturers, and would ignore all those types of drawings which were intended to give impressions of quality or effect.

Drawing office technique arose from the structural systems employed and the organisation of the industry. In other words, the means of conveying information obviously should vary with the kind of information which had to be imparted. Drawings must always be factual and relevant but necessarily varying in detail between one structural system or size of job and another. The information to be conveyed would affect both the type of drawing, its scale and the related schedules.

It was interesting to make comparisons, where they existed, between the sort of details which were prepared in the 17th and 18th centuries or the 19th, with the kind of drawings made today. It would be found that most time and attention had been expended on the preparation of masonry drawings, and that the drawings generally, though often complex in geometry and detail, did not have to convey the wide variety of information required at the present day. That information of course was related to the structure of the building industry at that particular time. Christopher Wren arranged his own contracts for the supply of stone on a sort of direct labour basis. For carving and metalwork, the same procedure was adopted, and in that way a great deal of information which was required today was unnecessary then. The craftsman knew his job; he was an artist and engineer in his own right and did not need to consult a British Standard or a Code of Practice to find out the correct way of doing things. A study of the drawings of the 19th century architects, such as those prepared by someone like Pugin, was equally interesting. The structure of the building industry had changed and more detailed information was required. At the same time, the formal requirements of Gothic revival or Greek revival made the elevational drawings internally and externally more important than any other. Time did not allow him to elaborate on that topic, but it was one of great importance and interest to architects. It had never had the investigation it merited, since most of the writers were either historians or critics. It seemed to him to form a very useful study.

In his view, drawing office technique must be related exclusively to the structural methods employed and to the structure of the building industry. Traditionally, since the 19th century, scales employed by architects had been $\frac{1}{4}$ in., $\frac{1}{2}$ in. and full size details. Those scales had been found by experience the most useful for conveying information on traditional building construction. They were very convenient for masonry and brickwork, particularly where at certain points skilled craftsmen were employed for profiling mouldings in stone, or in timber, and for the erection of what used to be called architectural details. If one thought of the sort of house that used to be erected in the 'twenties and 'thirties in neo-Georgian with double hung

sash windows, pilastered porch and cornice, with a staircase possibly with wreathed handrails and carved newel posts and so on, which was what the majority of architects were designing in this country during that period, and thought of the information to be conveyed to the builder, one would at once realise that those scales seemed to be the most convenient that could be adopted.

To turn in complete contrast to the information required in a highly prefabricated building today, if the superstructure of the building were such that it could be erected very largely by dry methods of construction (Bristol, Derwent and to a lesser degree Hills were examples), practically all the superstructure was being supplied in the form of standard components from a manufacturer and either erected by the manufacturer or by the contractor. Whilst foundations and site works and internal joinery and plumbing needed traditional detailing, all the relevant superstructure information could be conveyed by diagrammatic $\frac{1}{16}$ in. scale plans and elevations, with a key number in the centre of each panel referring to a schedule. Such structures with rigid grids and components helped to standardise all the subsequent plumbing, heating, lighting, joinery, etc. Thus, the information could be conveyed to the builder with a far greater degree of economy than for traditional types of buildings.

The drawings which were produced for the Secondary Technical School shown in the exhibition and which were found to be the most efficient were: $\frac{1}{16}$ in. scale sketch drawings; $\frac{1}{8}$ in. scale working drawings; quarter full size structural details; full size joinery details, and typewritten schedules and specifications. It was most important in the preparation of the material that information should be given once only in a set of drawings, schedules and specifications and in its proper place. It was found that the average new assistant from school was more concerned with producing what he considered to be an impressive complex drawing, with the same information repeated, than thinking about the information he was trying to impart to a contractor. The clear simple drawing of course was always the best one and obviously easier to use.

With the system adopted, the $\frac{1}{8}$ in. scale working drawing had been used to convey the information from the old $\frac{1}{16}$ in. scales and some from the old $\frac{1}{2}$ in. They were used as key construction drawings with numbered details referring to the $\frac{1}{8}$ full size structural details. Those $\frac{1}{8}$ full sizes replaced the $\frac{1}{2}$ in. and to a certain extent full sizes. For example, with the type of external joinery which one used to-day, it was very seldom necessary to go beyond $\frac{1}{8}$ full size, since one was not concerned so much with elaborate profiling as with proportion and quality of line. That information could be conveyed to the builder with a far greater degree of economy than for traditional types of buildings. That simplicity, however, was of course more

than offset by the increased complexity of services and the degree of physical standards required in modern buildings.

As far as possible the $\frac{1}{8}$ full sizes were standard and once done only their stamped reference number was required on the $\frac{1}{8}$ in. scales. Negative prints were obtained off the $\frac{1}{8}$ in. for plumbing, electrical and heating layouts. On the plumbing drawings there were also marked for the sake of convenience the joinery fittings and their overall sizes. There was a large office file of standard joinery from simple cupboard and drawer units to such things as wool storage racks and museum cases. Each fitting had a number and the numbers were marked on the layouts and only overall sizes were required on those drawings, with a print off the standard fitting for the quantity surveyor or builder. Those details had saved hours of time and resulted in a much higher quality of detail. Efforts were made to schedule as much information as possible and once scheduled that information was not repeated on drawings. It was being found more useful to have schedules typed on tracing paper and prints taken off those as required.

Whenever possible British Standards and Codes of Practice were referred to in specifications. Standard specifications were typed on foolscap tracing paper for general use in the office and they saved a great amount of time and increased the standard and efficiency.

Finally, it was considered advisable always to try to keep the information required by one specialist firm on a separate drawing. For example, railings and balustrading were shown on one sheet and not confused on a general detail of a stair well with unrelated information required by other trades. If he were asked to give a golden rule for the preparation of working drawings he would say that each piece of information must only be given once. Repetition generally caused confusion.

Mr. Gordon T. Tait said that he had been astonished at the exhibition to find that for a simple office building of standard section with two elevations there were something like 700 drawings produced. In another case, no less than 800 drawings were produced. It would seem that time and money were being wasted somewhere. However, he had found that economy and clarity were not very consistent, and it would appear that in order to produce clarity many drawings were needed.

The drawings which he himself produced to illustrate a scheme in the sketch stage were invariably $\frac{1}{16}$ in. scale drawings, and they did not give any more information than was strictly necessary. However, it was surprising what a great amount of information was obtainable from those small drawings.

In his firm the $\frac{1}{16}$ in. scale drawing was supplanted by the $\frac{1}{8}$ in. scale drawing because most of the local authorities with whom he dealt insisted on $\frac{1}{8}$ in. scale drawings. It was his firm's practice to order the drawing paper bordered and titled, the

sheet measuring 40 in. by 27 in. and weighing 95 grammes. In the quantity ordered it cost about 1 shilling, which represented about two minutes of a draughtsman's time, so the economy was well worth while.

He was very keen on having a set of drawings all the same size. They fitted very nicely together, and if the sub-contractors, engineers and others involved could be persuaded to adopt the standard layout, it made for a tidy, evenly arranged set of drawings. The title was in one corner of the paper, the scale in another and the date in another on many drawings which he received, but on his printed drawings there was a printed panel with space for the title at the top and the details, drawing numbers, firm's name, and so forth lower down. It left little to be filled in. There was a column for revision on the right hand side. This printed panel was a great economy which he recommended with confidence. It saved a great deal of time and produced a standard set of drawings for all trades and sub-contractors.

The $\frac{1}{8}$ in. scale drawing presented a clear dimensional picture, and it was very valuable to the ancillary trades, the mechanical services in particular, to whom the information was passed on by giving them negatives upon which they could put their own information.

There were other features which it was found made for clarity and simplicity. Stanchions or columns were numbered so that they could be referred to easily, and there was the numbering of doors as recommended in the Code of Practice. There was also a code consisting of four letters which gave in a simple manner the finish of the walls, ceilings, and skirtings.

A more elaborate type of drawing was generally used to supplement the $\frac{1}{8}$ in. scale drawing, namely, a $\frac{1}{2}$ in. scale layout of special areas.

In conclusion Mr. Tait said that all too often he found that when he received a set of drawings he could not see the picture of what was there, and if he could not he felt certain that the builder could not either. Therefore, he liked to provide the elevation of the feature with the section beside it, the plan underneath, and any full-size details if they could be got on to the sheet. He also liked to have a file of standard office details which could be reproduced from one job to another without modification but with improvement if necessary, because he found that two people working on the same job would do similar details in a different way.

Mr. P. E. Trench, in opening the discussion, said that the builder was interested really in four things. The first was the sequence of the drawings—the order in which he received them; secondly, the clarity or lucidity of the drawings; thirdly, the accuracy of the drawings and, fourthly, he was interested in the practicability of the drawings.

In an age when materials were in short supply, the sequence in which the architect produced his drawings was very important. The builder must not only have drawings

from which to build, but drawings from which to order, and the latter were not necessarily produced in the same sequence as the former. Again, from the builder's point of view, the programming of a job was as dependent upon the sequence in which the drawings were received as upon anything else.

He had found from experience that there could be too much information on a drawing, and there could certainly be unnecessary information on a drawing. He welcomed the suggestion that more thought should be given to schedules and sketches, colouring floor finishes, numbering openings, and that sort of thing. It helped with ordering, and it helped the general foreman who had to sort out the sequence in which he was going to carry out his operations.

There was nothing more galling to a builder than to receive drawings which had revisions on them which were not indicated, so that he had to go through the whole drawing to find where they were. Also it was all very well having the drawings numbered in the right hand bottom corner, but if they were not folded so that the number was on the top, the builder had to thumb through all of them to find the one he wanted.

Size of drawing was also important. 'We do not mind a number of different sizes,' said Mr. Trench, 'but we do find it difficult when we get in one post for the same job a drawing which is too big to get in a plan chest and with it one which is the size of an envelope.'

On the question of accuracy, as far as the builder was concerned drawings which were 100 per cent complete but only 60 per cent accurate were not as much use as drawings which were 60 per cent complete but 100 per cent accurate. Drawings which bore the words 'To be measured on site' were not liked.

With regard to practicability, by that he did not mean whether the drawings would work, because it could be assumed that drawings from good architects' offices would work. It meant the co-ordination of services, that is, the use of layover drawings to make sure that services tied up.

Mr. Trench concluded with the assertion that it would be a step in the right direction if all the drawings received were in fact drawings from which the bill of quantities was taken in the first instance!

Mr. K. C. Evans [4] (Herts County Architect's Dept.) said he could not understand how a discussion on office technique could take place without mention being made of the grid. The grid eliminated half the problems, particularly in dimensions.

The number of cases in which one saw a section and no plan was astonishing, and elevations particularly received little attention at the present time. What happened to lead flashing when it met a projection was seldom considered.

There was a good case for the pictorial representation of drawings. It might be that eventually the foremen would have experience in reading diagrams quickly, but in

the meantime there was a great need for pictorial presentation.

Mr. B. B. Bednarczyk suggested that on complicated jobs where the architect was the co-ordinator insufficient use was made of printing. Prints came in and the architect had to copy them with tracing paper. If he sent his design drawings to the consultants so that they could put on their information, it would simplify and speed up the drawings at the design stage.

On the question of grids, he used backing paper of graph paper with two scales, $\frac{1}{8}$ in. and $\frac{1}{16}$ in. scale divisions and 1 in. and $\frac{1}{2}$ in. scale divisions. It was very useful for lettering because the necessity to line in was obviated.

Mr. John Ratcliff, O.B.E. [F] said the question of separating trades in drawings depended on the type of contractor and the type of building. Before embarking on a radical reorganisation of working drawings there should be more contribution from the builders by way of information whether it would in fact be acceptable. After all, the standards of builders varied greatly, and it was necessary to make a choice at the start of each job of the type of drawings to be produced.

As to standardisation of details, it was difficult to get one man to accept another man's design for a standard.

The quantity surveyor would much prefer a complete set of $\frac{1}{8}$ in. scale drawings so that he could start his taking off, to a set of $\frac{1}{2}$ in. scale drawings.

Mr. Howard Lobb, C.B.E. [F] suggested if architects could make it a standard practice to send out $\frac{1}{8}$ in. scale drawings with bills of quantities to the contractors when tendering, much more collaboration might well result and it would certainly be paying something other than lip service to the question of being one of a team. His firm made a practice of this and found it to give excellent results. It would be interesting to know whether, if it could be made standard practice, Mr. Trench would approve it as a contractor.

Mr. P. J. Carter [4] said there was a great deal to be said for incorporating a specification with the drawings, typed on the same sheet.

It would seem that the logical sequence of titling a drawing was to put the number at the top so that when the drawing was folded it could be seen, and then what the drawing related to directly under the number. The client's name should be at the bottom, and there should be a gradual working up to the name of the job and the name of the drawing.

Mr. Charles F. Scott [4] said that no mention had been made of colouring drawings. It would be of interest to know whether the foreman found the colouring of the site drawings of sufficient value to make it worth the effort of having them coloured.

Mr. Kenneth F. Price said he had thought it was universally accepted that if the necessary information could be supplied earlier, then quite substantial savings, in both time and cost, could be made. As a builder he did not expect all the details before starting the job, but it was most desirable to have them all before the job was finished! The following was a quotation from a letter received recently from a government department: "Enclosed are four copies of Drawing No. . . . for your retention and information. This drawing shows holes required in the first floor slab and beam casings, and fixtures and ducts in the roof slab. This work having already been completed no action should be taken unless otherwise instructed separately!"

Mr. R. B. Hellard [4] asked whether the system of drawings described by Mr. Elder was considered to be more expensive in office time than the traditional method. If it were more expensive, was there any saving during the drawing stage and was there any later saving to the architect during the course of the job?

Mr. R. O. Foster [F] said that his practice had been to reduce $\frac{1}{8}$ in. scale drawings to $\frac{1}{16}$ in. and send those out to builders with the quantities for tendering. It was assumed that all the builder then required was a general picture of the job. He had also made efforts to induce quantity surveyors to produce an index of quantities.

Mr. C. E. D. Wooster [4] (Ministry of Education) stated that he had been carrying out a project using a method similar to that described by Mr. Elder. It had been necessary to work with the builder from the beginning and to ensure that the drawings were ready on time. The work had been divided into three stages: investigation, designing and working drawings. The information had been given to the builder in three main stages—drawings for work below ground, for superstructure and for finishings and fittings.

To some extent Mr. Elder's method of drawing by trades had been adopted, but telescoped with the assembly drawings. The result was that a check was kept on progress and the job completed within two weeks of the programme.

Mr. Ian Elliott [4] asked Mr. Trench whether he was ever inundated with a large number of drawings, possibly to a large scale, when in fact he would have preferred to have had a smaller number of drawings, possibly to a smaller scale.

Mr. John Elliott [4] asked Mr. Trench whether $\frac{1}{8}$ in. scale drawings were of any assistance to the builder.

Mr. Peter Morgan [4] took up the previous point and referred to a live project carried out when he was a student at a provincial school. It consisted of three blocks of flats and a block of bungalows. A standardised

sheet size was used for drawings, the general layout being at $\frac{1}{16}$ in. scale and the remainder at $\frac{1}{4}$ in. scale. 70 drawings had been completed in 9 weeks and the whole job run through efficiently. The builder was fascinated by the use of those two scales which, from the point of view of site supervision, helped considerably.

Mr. John Stillman [4] inquired what procedure architects adopted for checking drawings, and what percentage of time was spent on doing so.

Mr. Donald Insall [4] suggested that if 700 drawings were produced in the course of a job, at least 7,000 equally confusing pieces of paper must circulate inside the office. It would be interesting to have ideas on how to cut that down because "clarity begins at home"!

Mr. C. C. Handisyde [4], reverting to the question of sending out drawings with the bill of quantities, asked whether the average contractor really made any use of such drawings and, if so, what sort of use.

Mr. George Fairweather [F] said he was a little surprised that it should take 700 or 800 drawings to explain a fairly substantial building. As to the suggestion that there were some 7,000 sheets circulating in the office, he could not help feeling that information could in fact be recorded clearly and accurately as well as briefly on small sheets, provided some licence were exercised with free hand technique and vocabulary. One small quarto sheet could contain more lucidly and accurately information which might otherwise occupy several double elephant sheets. Architects were too rigidly tied to certain conventional customs which had grown up with them.

Mr. B. A. Le Mare [4] referred to the question of collaboration between the architect and the builder and suggested that it was up to the architect to know much more about the processes that went on in a building contractor's office. In a recent L.C.C. negotiated contract various drawings and details had been modified to suit actual site operations; this was one way of collaborating. Another way was to send out more information with the bills, and a third method was for the builder to start a job only when it had been thoroughly planned.

Mr. R. Carton Tickell [4] referred to a recent JOURNAL article on American practice in which it had been said that, when the architect had been briefed by the client, the architect had sent for the man who was to manage the job and discussed the exact number of drawings to be produced and their size; the number of hours which would be taken on the drawings was then worked out. The result of such a method was that the client could be told the actual time in which the drawings would be completed, and a fairly accurate estimate could

be given beforehand of overheads in producing those drawings.

It would be interesting to know whether, in considering drawing office technique, anyone had worked out drawings in relation to overheads, and the production of drawings compared with the fee obtained for the job on completion.

Mr. J. B. Bickerdike [4] said that how anyone could reduce completely to a formula in what format drawings would be produced was beyond him, because surely throughout all the stages of producing drawings there was a very strong design element.

Mr. G. Grenfell Baines [4] suggested that more time should be spent on designing with the freehand type of drawing, and then drawing that out in a manner which enabled the builder to have information to assemble the job.

Mr. J. G. Brunton [4] asked why the breakdown into trades was preferred to the breakdown into elements. If alterations occurred on a job it was necessary with the trade breakdown to amend several drawings whereas with the elemental breakdown it was only necessary to revise one section.

Mr. H. Werner Rosenthal [4] pleaded for early co-operation with the builder on all aspects which would save a great deal of elaborate drawing time.

Mr. C. G. Bath [F] said that it was very stimulating to see so many types of presentation of techniques in the exhibition, but he wanted to know what recommendations the speakers would make in respect of the introduction of those techniques to a school, or whether in fact they would introduce those techniques.

Secondly, he asked why it should be necessary to train to a very high degree of presentation in the schools when in fact the work on sketch plans and drawings for clients was so very meagre.

Mr. G. R. Vaughan Ellis [4] said that Mr. Elder's system of drawing might offer a solution to how a bill of quantities should be prepared, because it was like a programme of work and the major fault of a bill of quantities was that it did not bear any relation to the drawings and did not help the builder on the site. It would also be helpful in arriving at a cost analysis of the job.

No mention had been made of internal elevations, yet the interior aspect of any building was very important.

Mr. W. Mullins, in reply, referred to the use by the contractor of drawings when he was tendering for a job and said he had always found that very few contractors were interested in the drawings when they came to tender.

On the question of the bill of quantities, architects always seemed to want to use the bill of quantities for purposes other than

those for which it was intended. A bill was a measurement of the materials and workmanship on the job, and as such it was a document to be used by the contractor. It was not meant for the architect to use for his own benefit.

Mr. M. Powell, in reply, said it was quite obvious that architects were becoming very conscious of the need for clarity in drawings because they were legal documents. He was relieved to hear the question of design mentioned. That was something which could never be forecast, and if drawings could be clarified with the separation of design drawings from working drawings, architecture would improve.

Mr. Gordon T. Tait, in reply, referred to internal elevations and expressed the belief that every bit of information should be sorted out even although it did not appear as a drawing. As to the price of drawings he had mentioned, the salary worked at was 10s. an hour, and to that 10s. were added the normal overheads.

On the question of the case for professional draughtsmen, Mr. Tait said it occurred to him that in view of the dissatisfaction which had been expressed recently about the status and pay of qualified architects, possibly some of them might be over-trained and there might be a good case for people contenting themselves with the status of professional draughtsmen.

He found the planning grid very useful in the sketch stage and it was a great help with planning. One weakness was that sometimes people would allow the grid to become the end and not the means to the end.

Mr. Henry Elder, in reply, said that he believed in the use of the grid. Also it was not very difficult to adapt the system he had described to a traditional building.

On the question of $\frac{1}{8}$ in. scale drawings or drawings attached to quantities, when a scheme was designed on foilsheet sheets those sheets could be bound in with the quantities, so obviating the need for rolls of drawings. He had found that by enclosing drawings with the quantities the builder had become interested in the job instead of interested in the quantities.

As to the titling of drawings, he adopted the first three letters—MID in the case of Middlesbrough—and the reference numbers were broken down to the particular sequence used.

It was not possible to answer the question as to what his method of drawings cost in relation to overheads. It was felt, however, from experience that it would not prove to be too uneconomical. It was realised that more time would be spent in developing the drawings than was perhaps usual, but it was far better to use time in sorting out mistakes in the office than on the site.

He always used sketches, and there was a constant drive for simplicity. Simplicity helped with costing and with the finished architecture.

In the United States there were no bills of quantities. Drawings were done very much better on the whole than those in this country, with much greater detail, and the specification became more important. But when working on a specification and drawings alone it was not possible to have variations because there was no basis.

The specification was another problem. He was antagonistic to the normal form of accepted specification. It was found that certain books became used and paragraphs copied out which were completely irrelevant to the job and which, from the builder's point of view, must be meaningless. The specification could only be of use if it were related to the job itself.

As to the question why break down drawings into trades and not into elements, on the job the normal procedure was by trades and not by elements. There were times when it was necessary to amalgamate trades, but wherever possible they were kept separate.

He felt strongly that schools should in fact be leaders in the experimental methods of developing things within the drawing office. They were not, but neither were architects' offices. We had become so established in methods of routine that to depart from them was very difficult.

The drawings he had outlined were of considerable help to quantity surveyors. In fact the drawings did a great deal of work for them.

Mr. P. E. Trench, in reply, expressed the view that more thought should be given to the question of separating trades and the question of elemental drawings. There were cases where group thinking was of immense value to the builder.

Drawings of $\frac{1}{8}$ in. scale going out with bills of quantities would be of great value.

So far as colouring was concerned, the pre-war colouring was not, in his view, worth while any more. For alteration jobs and revision, however, colouring was most important.

Sketches detailing what was in the architect's mind and sent to the builder might replace drawings to a great extent in the early stage in putting the builder in the picture.

It was difficult to say yet that the module or planning grid had in any way reduced the cost of building or had speeded it up.

On the question of information before the job started, he disagreed with the statement in the Anglo-American Productivity team's report that the Americans had all their information fully buttoned up before a job was started. That was not his experience when he was in the United States.

The Chairman in proposing a vote of thanks to the speakers for their contributions, expressed a little disappointment that 'architecture' herself was not present at the feast—even as a skeleton! The one guiding principle in all drawing was whether it made the building more likely to be a work of architecture or not.

Practice Notes

Edited by Charles Woodward[4]

MINISTRY OF HOUSING AND LOCAL GOVERNMENT. Rating. Circular 62/55 dated 18 November 1955 gives guidance to rating authorities in respect of the new valuation lists made under the Rating and Valuation (Miscellaneous Provisions) Act 1955. The new valuations come into operation on 1 April next and a proposal to alter a list can be made on or after that date. The procedure is set out in the Circular which is obtainable at H.M. Stationery Office, price 9d. net.

Water Charges. Circular 74/55 dated 30 December 1955, addressed to Water Undertakers, refers to charges for water having regard to the increased assessments of premises which comes into operation on 1 April. Many consumers think that the amounts they will have to pay for water will be proportionately increased.

The Minister is confident that all water undertakers basing their charges on rating assessments will, so far as is practicable, bring their water rates down in such a way as to do no more than maintain their incomes. Where some increase in income is necessary (e.g. where but for the revaluation the undertakers would have had to seek an order under section 40 of the Water Act 1945, authorising higher charges) the Minister trusts that the increase will be kept to a minimum. It is open to any 20 or more persons supplied with water by any statutory water undertaker operating under a local enactment (and to any local authority within whose county or district any such undertakers supply water) to apply to the Minister to reduce the rates and charges which those undertakers are authorised to levy and charge. The Minister hopes that undertakers will so act as to obviate applications of this sort.

Where water is charged for at a uniform rate or rate poundage upon the annual value of the premises occupied, commercial users who occupy premises of high annual value but use little water pay substantially more per gallon than householders. Unless special steps are taken, this disproportion may be increased when the new assessments come into force on 1 April. Some water undertakers have power to charge the water rate on a proportion only of the annual value of commercial premises (see section 46 (1) of the Third Schedule to the Water Act 1945, and to similar provisions in some local enactments), most others can levy different rates or rate poundages within prescribed maxima. The Minister hopes that water undertakers in adjusting their charges generally on 1 April will use their powers to ensure that commercial consumers are treated fairly. In many cases this may mean substantial rebates.

Section II of the Rating and Valuation Act 1955 enables water undertakers in certain circumstances to vary the dates on which the new valuation lists begin to be used as the basis of their water charges.

The Circular can be obtained at H.M. Stationery Office, price 3d. net.

SPORTS GROUNDS AND HORTICULTURAL WORK. The disadvantages of executing horticultural and sports-ground work under sub-contracts to the building contract have been described in a paper submitted to the Practice Committee. The work is unrelated to normal building work and may have to be executed at times which would unduly prolong a building contract. It is therefore suggested that the best results will be obtained by a direct contract between the specialist and the employer. This will enable the work to be executed at the proper season and would be generally advantageous to all parties.

Care should be taken that the building contract includes provisions for properly clearing the ground and that brickbats and other materials which might increase the specialist's work and damage his plant are not left or buried in the areas to be worked. It should also provide, where necessary, that the builder is restricted to areas not required by the specialist or alternatively that the two should co-operate.

The Practice Committee call the attention of members to this matter.

PLASTER BOARD PRICES. The British Plaster Board (Holdings) Limited announce their decision to contribute further to the campaign to arrest inflation and stem the rising tide of costs by undertaking that, in addition to the announcement already made by the Plaster Board Industry, there will be no increase in the present prices of the gypsum rock and plasters sold by their subsidiaries, at any rate until 30 June 1956.

It must be appreciated that action of this kind by private industry can only be effective for a limited period and over a limited field unless there is positive action in support by the nationalised industries, the trade unions and the Government.

STANDARD METAL WINDOWS. PRICE. The Metal Window Association has, after full consideration, decided to give an undertaking to maintain the selling prices of its Standard Metal Windows at least until July of this year. The Association hopes that this may help to stabilise or reduce the cost of house building.

The Association also hopes that all sections of the community, including the nationalised industries and organised labour, will support this action and so help to lower the cost of living and re-create confidence in the value of money.

ELECTRIC LAMP PRICES. Thorn Electrical Industries Ltd. announce that to assist in the stabilisation of price levels in accordance with the expressed wishes of the Prime Minister there will be no increase in the prices of Atlas and Ekco tungsten filament lamps and fluorescent tubes during the next six months.

HOUSE PURCHASE. Land scarce and costly. Speaking at the annual general

meeting of the Federation of Registered House-Builders held at the Dorchester Hotel, London, Mr. George W. Reed, retiring President of the Federation, said:

During 1955 private housebuilders have fully justified the Government's confidence and have produced more houses for sale than in any year since before the war. Our aim is to make home-ownership a good and worthwhile investment for all classes of wage earners. There are, however, three main obstacles in the way. They are:—

1. Much suitable land has been "sterilised" for house-building purposes by development plans, with the result that the sites that are available are too costly, even for most higher income group purchasers. While we agree with the general principle of green belts, too rigid adherence to this policy is making house-building land even more scarce and costly.
2. House purchasers save the country money by housing themselves without subsidy, but the credit policy of the Government seems likely to deter rather than encourage the expansion of private house-building, from the point of view of both purchasers and builders.
3. Legal costs for new houses on an estate, where work is often repetitive, are too high. Stamp duty on new houses should be abolished. These costs represent a heavy cash item for young people, often of modest means, who are starting on the all-important business of making a home.

Unless these matters are looked into the smooth expansion of the private house-building programme is bound to be affected.

NATIONAL JOINT COUNCIL FOR THE BUILDING INDUSTRY. Under the Sliding Scale Rule an adjustment of 1d. per hour increase in wages is due, which increase is authorised by the Council to come into operation as from 6 February 1956. The new rates per hour for Craftsmen and Labourers are as in the table below.

The rates for Watchmen per shift from 6 February are:—

London and Liverpool	Provinces
22s. 6d.	21s. 3d.

In current work under the R.I.B.A. Form of Contract the increases will be a net addition to the Contract Sum.

WAR DAMAGE COMMISSION. The Commission's Report for 1955 shows that £27½ million was paid out in 1955 and the

total war damage payments to date amount to £1,174 million.

Contributions by property owners during and after the war amounted to nearly £200 million.

PLANNING DECISIONS. A local planning authority refused permission for the erection of bungalows where it was proposed to omit boundary fences between pairs of bungalows and provide a joint access between 8 and 10 feet wide so as to give a means of entry to garages at the rear should an occupant wish to build one. The Minister dismissed the appeal as he regarded the proposed joint access as unsatisfactory and inadequate. In another case the Minister held that the use of the forecourt of a shop for the display and sale of goods in connection with the business carried on in the shop did not involve development.

(Details of these cases will be found in the issue of the JOURNAL OF PLANNING AND PROPERTY LAW for January.)

R.I.B.A. STANDARD FORM OF CONTRACT. Practice Notes Nos. 30 and 31, issued by the Joint Contracts Tribunal representative of the Royal Institute of British Architects, the Royal Institution of Chartered Surveyors and the National Federation of Building Trades Employers. PRACTICE NOTE 30. It is provided in Clause 9 of the R.I.B.A. Standard Form of Contract that 'the measurement and valuation of the Works shall be completed within the Period of Final Measurement stated in the appendix and if no other period is so stated then within three months from the practical completion of the Works'. In the Appendix to the Form a space is provided for the parties to insert the Period of Final Measurement applicable to the contract.

The Tribunal desires to call attention to the discretion open to users of the Form and advises that in deciding upon the Period of Final Measurement to be inserted in the Appendix regard should be had to the size and nature of the contract. PRACTICE NOTE 31. It has been brought to the notice of the Tribunal that the certificate to be issued by the Architect in accordance with Clause 24(d) of the R.I.B.A. Standard Form of Contract on practical completion of the Works is sometimes regarded as a penultimate certificate and therefore the Architect is precluded from issuing any further certificates before the final certificate becomes due under Clause 24(f).

The Tribunal sees no grounds for construing the contract in this way and accordingly recommends that the Architect should issue such further certificates for

payment as may be justified by the circumstances between the certificate issued on practical completion and the final certificate.

THE FOOD AND DRUGS ACT 1955. This Act empowers the Minister of Agriculture, Fisheries and Food to make regulations concerning the construction, layout, drainage, equipment, maintenance, cleanliness, ventilation, lighting, water supply and use of premises in at or from which food is sold or offered, exposed, stored or prepared for sale for human consumption, including parts of premises in which apparatus and utensils are stored or in which refuse is disposed of or stored.

The Regulations under the Act have been made under the title The Food Hygiene Regulations 1955 (S.I. 1955, No. 1906) which generally came into effect on 1 January, but a few provisions are deferred until 1 July next.

The Regulations are obtainable at H.M. Stationery Office and will be administered by the Common Council in the City of London, the metropolitan borough councils elsewhere in London, and borough, urban and rural district council in any borough, urban or rural district.

LAW CASES

Wm. and F. Catmur Ltd. v. Moss and another. Housing Repairs and Rents Act 1954. Meaning of 'good repair' under the Act. The Court of Appeal dismissed this appeal by the landlords from a decision of the County Court Judge who had given judgment for the tenants.

The landlords claimed arrears of rent, being increases under the 1954 Act, and the Borough Council had given certificates of disrepair. The tenants refused to pay the increases of rent.

For the landlords it was submitted that under the Act a house as a whole had to be in good repair and that it did not cease to be in good repair because part of it was defective. The Court of Appeal held that the question could only be solved by looking at all parts of the house. If part of it which was in constant use was out of repair, then the condition under the Act was not satisfied. If part of a house was in such a state of disrepair, the condition of it might adversely affect the safety or health of any of the occupiers or materially interfere with their comfort and the house was not then in good repair. The common law rule that a tenant could not complain unless he gave prior notice to the landlord did not have any application under the Act of 1954. (THE ESTATES GAZETTE, 21 January 1956.)

J. M. Wilkie v. Scottish Aviation Ltd. Surveyor's claim for professional fees. This case was a claim by a chartered surveyor for fees in the Court of Session in Scotland, and at the time of his employment nothing was said by either party as to the basis of remuneration.

The surveyor rendered an account based on a schedule of charges issued by the R.I.C.S., and the Judge said that if nothing was said as to the remuneration it became

	LONDON		GRADE			LIVERPOOL District
	Inner	Outer	A	A1	A2	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Craftsmen	4 2½	4 2	4 1	4 0½	4 0	4 2½
Labourers	3 8	3 7½	3 6½	3 6	3 5½	3 8

the question on what basis that remuneration fell to be calculated. In some cases the basis might be that of *quantum meruit* calculation, according to what a reasonable employer might be expected to pay and a reasonable employee expected to receive, and into that computation many elements might enter. In that class of case it was therefore an implied term of the contract that reasonable remuneration should be paid and the defendants said that that was the situation in the present case as the schedule of charges was not brought to their notice.

The Judge said, however, that there was another class of case which was summarised in a passage in Fraser on 'Master and Servant' which was repeated with some approval by Lord President Normand in a case in 1930. That passage was in this form: 'In most trades and professions there is a customary and general rate of wages to which in the absence of special agreement, persons are held to have tacitly agreed.' The plaintiff's case was that he fell into that second category, and that it was an implied term of the contract that the defendants should pay him on the basis of the R.I.C.S. schedule of charges. The plaintiff said that implication rested on custom, and that when a person employed a chartered surveyor he must be taken tacitly to have agreed to the remuneration on the basis of the schedule of charges.

The Judge said that that contention seemed to raise points of interest and importance not only to chartered surveyors and their employers, but to other professional relationships, and adjourned the case for him to hear further evidence. (THE ESTATES GAZETTE, 21 January 1956.)

Book Reviews

The Future of Architecture, by Frank Lloyd Wright. (English ed.) 10 in. x 7½ in. 325 pp. incl. pls. and other illus. Architl. Press. 1955. £2 10s.

It is unlikely that Mr. Wright's new book will be read by those on whom his buildings have made no impact, so that a word or two about some possible sources of his ideas may not be out of place.

Mr. Wright was born in the Middle West in 1869. This means that he was already in his thirties by 1900. He is therefore almost a generation older than the men who created the new architecture in Europe after the first world war. This fact is very important, for the formative influences amid which he grew up were markedly different both in time and place.

Like Proust, Mr. Wright read his Ruskin, and like him he is a moralist. But unlike Proust, he inherited from the puritan literary climate of New England something of the tremendous sway which German 19th century philosophers held in America, especially with the unitarians, among whom he was raised. At this point in time it is perhaps difficult for us quite to understand this double influence—treble if one includes

Darwin—in advanced 19th century thought: Hegel was translated into English by three Chicago architects in the 1880's, during the decade in which Le Corbusier, Mies Van der Rohe, J. J. P. Oud and Walter Gropius were born.

These German idealist philosophers had been driven by the eclecticism of the age to define an aesthetic in terms free of associations. In somewhat more turgid form they arrived at the same conclusion as the French academician, Charles Blanc, who, faced with the plethora of art objects in museums, asked what they had in common, and concluded that form, line and colour were their only universal elements. This idea has been made patent by the various schools of non-figurative art. The German philosophers had already concluded that there was in human beings an unique aesthetic emotion, brought into play by art objects, and perhaps only successfully excited by the simultaneous exercise of all the senses. This is the theory of the Total Art Work which had much to do with 19th century developments in opera and ballet; and this theory led men to look for a unitary viewpoint underlying works in the most diverse media and of the most varied characteristics. It eventually became the programme of the Bauhaus. Everywhere, it came to be assumed that art had to do chiefly or only with the feelings, and not with the communication or celebration of ideas and beliefs held in common. This lack of objectivity in the attitude to the human condition has blinded Mr. Wright, as it has blinded many others, to the critical distinction between an aggregate and a community, and in Mr. Wright's case has led to an almost total repudiation of the city as a catalytic element in human affairs.

In his architecture Mr. Wright has worked almost wholly as a liberator; he has awakened an entire generation of European architects to a new and more concrete attitude to space, solid and surface. No one is more master of the supple and flexible plan than he, and no one, except perhaps Le Corbusier, so thoroughly understands the subtly dramatic possibilities of natural light.

But unless one recognises his intellectual position, which obliges him to wholesale condemnation of contemporaries of the most various characteristics, and to an ambivalent emotional attitude to cities and machines and their products, one is likely to be led astray about what is and is not possible and desirable for our civilisation.

THOMAS STEVENS

Trees in Towns, by Ronald J. Morling, including chapters on Trees and the Law, by John T. Plume, and Trees and Highways, by D. V. Wells. 8½ in. xii + 79 pp. incl. illus. + (8) pls. and pp. of illus. ESTATES GAZETTE. 1954. 7s. 6d.

In this country, trees in towns are generally in the charge of people who know nothing about them. Everywhere existing trees are mutilated and wantonly destroyed, and when new trees are planted they are the wrong kinds in the wrong places. Some day, perhaps, all towns will have a properly

qualified expert in charge of trees and landscape; meanwhile a concise manual on the planting and care of trees in towns, written simply enough to give the borough engineer's officer the rudiments of the job, would certainly help to reduce the casualties and prevent the worst mistakes.

At first glance, this book seems to be what is needed. It contains much useful information on the way trees grow, on the kinds of trees suitable for different situations, and on the laws and statutes relating to trees and their preservation; and it is obviously written for those who have no prior knowledge of the subject.

Unfortunately, the book is not as useful as it might be. The writing is slipshod and unclear; one finds rather sketchy (but still not really simple) accounts of the physiology of trees, but no clear instructions as to how this affects planting, pruning and maintenance. Surely, for example, one of the first things a book like this should do is to tell how and when to prune and lop trees, and how not to, with diagrams showing what happens; and yet this vital subject is hardly mentioned at all.

The chapters on tree preservation orders and statutes, and trees and the law, are quite useful, and so are the lists of trees for different purposes in Chapter VIII and the brief descriptions of species in Chapter IX. But here again the information is inadequate, inconsistent and not sufficiently tabulated for comparison; and the indiscriminate use of Latin and English names with insufficient cross-references will be confusing to the beginner.

It is a pity that the book cannot be recommended more highly, but the fact is that there is a better book already covering much the same ground, A. D. C. Le Sueur's *Care and Repair of Ornamental Trees*, which, though technically more advanced, gives a much simpler account of what has to be done.

PETER SHEPHEARD [A]

Modern Office Buildings, by Michael Rosenauer. 9½ in. 163 pp. incl. pls. and other illus. Batsford. 1955. £1 15s.

It is fashionable for architects to express themselves in print and a considerable number have done well in the public market. The standard for that success does not, however, necessarily qualify the work for inclusion in the practitioner's bookshelf. This book is aimed at 'client, property-owner and architect'—a wider field than its content justifies. Mr. Rosenauer gives an outline of function, describes the general process of planning and design in the architect's office, and then goes on to discuss fenestration, vertical trafficways, internal partitions and finishes, mechanical services, catering facilities and style (in that order). The potential client will find it readable and informative and the student will benefit by making a précis of it. It is adequately illustrated, some of the examples being old friends but others not so familiar.

The activities to be housed in an office building are not so diverse that specialised units of accommodation need to be designed, as they do, for example, in

schools or laboratories; the scheme is generally an essay in the economical provision of continuous useful space, capable of rearrangement as future requirements dictate. Variations of course do occur (extra floor loadings; soundproofed areas) and additions may be called for (auditoria; canteens), but these do not affect the basic simplicity. Thus plans are predominantly rectangular, above two stories a frame being employed. In all schemes the same problems recur: choice of frame and placing of stanchions related to partition layouts, space taken up by sanitary accommodation and circulation vertical and horizontal, cubicles versus open floor areas, the investment/return ratio, the detailed design of frame, floors and walls for space heating and gridding of service outlets, and the like. Unfortunately the book does not offer technical guidance on these questions. Regarding economics, the author cannot be expected to commit himself. The subject is shrouded in a mystery until recently shared by schools and flats. It is however clear that the very simplicity of these buildings (or at least of their dominant elements) underlines a case for proper cost investigation. The results could be applied in many other fields of design.

MALCOLM HISLOP [A]

The City of Man, by Christopher Tunnard. 9½ in. xxiii + 424 pp. incl. illus. + pls. and pp. of illus. New York: Scribner; Lond.: Archt. Press. 1953. £2 10s.

The decline of urbanism dates from the advent of the railways and the exit of the middle classes to the suburbs. Boston, Massachusetts, as an extreme example, is tending to become an empty shell whose inhabitants have fled to the New England countryside. It is faced with ever-rising taxes caused by the flight—a flight itself provoked by heavy taxation and the fear of possible atomic warfare, and certainly assisted by fast motor roads. As the inhabitants go, so business and shopping follow.

It is very doubtful if such a process can be stopped. We are faced, even in England, with the virtual disappearance of the city as we knew it, unless real answers can be found to the twin problems of traffic congestion and the flight to the suburbs. In the last decade our towns have been subjected to a mass of statistical analysis and diagnostic surveys. These have been useful and essential, even if they only confirm objectively and in detail the diseases of which we have been instinctively aware. We need now to restore faith in the city and breathe life into the yellowing ivory of the galatean image—to believe again in the conscious process of civic design.

Professor Tunnard has just the sort of faith we need, and in a curious way, perhaps, has found it through the study of American cities, which forms the basis of this book. He finds it in these cities not because they are beautiful or perfected—rather the contrary. 'The challenge', he says, 'lies in a promise—American cities are not barren deserts, they are still warm

and plastic, they are the focal points of a nation in which "Chaos of a mighty world is rending into form". But his investigations in this field, unique and valuable as they are alone, have been extended further into an analysis of all cities, from Paris to Pullman, from Venice to Salt Lake City.

It is a fascinating work, with much unusual information and many original ideas. Above all, it is a courageous plea for a sensible approach towards city development, a plea for visual civic development and for the creation and training of city designers as artists in the form of cities.

FELLO ATKINSON [A]

Masters of Modern Art. Alfred H. Barr, Jr., ed. (*Museum of Modern Art*, New York.) 11 in. x 10 in. incl. pls. and other illus., some coloured. New York: Simon & Schuster; Lond.: Putnam. 1954. (£5 5s.)

This publication celebrates the 25th anniversary of the inauguration of the Museum of Modern Art, New York, and surveys the whole field of Modern Art—painting, sculpture and architecture, photography, films, industrial and commercial art, etc.—with lucid essays written by the Museum's own officers, supplementing the reproductions of the work of seventy-five years, drawn from the Museum's own international collection assiduously amassed during the last quarter of a century.

The foreword points out that the original policy of the Museum was not to form a permanent collection but to pass on works acquired to other institutions. Now the programme is changed and 'the creation of a highly selective permanent collection of masterworks both by twentieth-century artists and their great nineteenth-century forerunners' is one of the aims of the Museum.

Notwithstanding the enormous range of its activities and the widespread exhibitions that have been circulated from New York (820 to date), it is to be hoped that the Museum will not crystallise into an institution, set up with larger galleries and even larger storage vaults, staffed by erudite artmongers waiting to receive and incarcerate the masterworks while the paint is still wet. All evidence is to the contrary and doubtless most of the permanent collection will never have a home and should circulate like the Flying Dutchman until the canvases disintegrate.

The book is a museum in itself, and so long as the plates (many of which have appeared in other museum monographs) are considered only as reminders of joyful contact with the originals, very well; but with the spate of such glossies (the Museum has been responsible for some of the best), the resulting art-book-conscious public, like disc fans, may forget that it is necessary to experience the originals and become content with the reproductions. These are so quickly assimilated in the beautiful productions of Messrs. Skira, Phaidon, and the rest. Similarly the resulting quick dissemination of fashion may have an increasingly baleful influence on the creative impulse. Maybe the private purchase and enjoyment of originals by anyone or

the making of private music has more to do with the culture of a country than a smattering of the latest and all the global masterworks in miniature on the bookshelf. Culture is something that people do, not have done to them, and cannot be measured by statistics of art consumption.

Apart from such qualms the book can be thoroughly enjoyed. About half the number of reproductions are constantly rewarding, though the rest are in a different category, interesting, amusing or otherwise, possibly only included to satisfy chauvinists or the completion complexes of curators. It is of satisfying format, luscious thickness (weight 5 lb.) and almost irresistible shelf appeal to all who enjoy beautifully made things. It would certainly be in this reviewer's library save that those who write in these pages cannot, alas, keep the books they review.

TREVOR DANNATT [A]

Bauten der Industrie, by Walter Henn. (*Handbuch zur Gestaltung &c., series.*) 2 vols. 11½ in. 288 pls. and pp. of illus. Munich: Callwey [1955]. DM 80.—, abt. £6 16s. 6d.

The difficulty in reviewing this publication lies in the fact that the standard of publication and the amount of information given in the two volumes is so great that no short review can do justice to such a fine production. Books published by Georg D. W. Callwey of Munich are always notable for their very high standard, and this particular work must be among the best Callwey have ever produced.

The first volume deals with the problem of planning and design for industrial buildings and covers the whole field of industrial work, starting with the general question of layout, circulation within the units that make up a factory, detailed relationships of one part of the factory to another, forms of construction, methods of roof and other types of natural lighting and the many other problems that arise in factory design. Sections are devoted to detail problems, such as the circulation of vehicle traffic, the varying forms of lift and conveyor, the requirements of rail transport within a large industrial group, and the many varying types of building structure which can be used for single and multi-storey industrial buildings. The problems of factory construction are also examined and such subjects as window construction, expansion joints, roof construction, partition details, cladding, travelling gantries, sanitary equipment, electrically operated gear and a whole host of other matters are discussed and illustrated in the greatest possible detail.

Although the work is in German it is extremely easy to follow, as the information is largely given in diagram form and much of the text is in the form of tables, which can be easily translated by reference to the useful international glossary of terms given at the end of Volume 1. The standard of presentation is superb and the first volume is well worth study for the drawings alone. The small ink sketches of various types of buildings and structural method could hardly be improved upon. They make the

book a delight to handle and one which can teach English publishers a great deal about the production of technical books for ready reference.

Volume 2 is entirely devoted to examples of modern factories throughout the world. Nearly 160 different examples are given, each one illustrated by means of photographs, plans, drawings and in some cases details. A special section at the end of Volume 2 consists of very carefully annotated detail drawings of certain buildings illustrated in this volume. It is a sad reflection on English industrial architecture that, out of this huge collection of fine modern buildings, only six have been built in Great Britain. Many well-known overseas examples appear once more, but there is a very large number of buildings not previously illustrated which offer a constant source of information and interest.

It is difficult to praise this publication too highly. In spite of the price, one hopes that architects and students in this country will make every endeavour to obtain these books and use them, and that industrial clients will see them and be encouraged to think of industrial buildings as an architectural problem, as well as a manufacturing one.

EDWARD D. MILLS [F]

Pedagogical Sketchbook, by Paul Klee. *Sibyl Moholy-Nagy*, trans. 9½ in. 64 pp. incl. illus. Faber & Faber. [1953.] 15s.

Paul Klee's *Pedagogical Sketchbook* represents a scheme for a section of the theoretical instruction at the *Bauhaus*, where he taught (with Kandinsky, Feininger, Moholy-Nagy, Schlemmer and Albers) from 1921. Klee, always preoccupied with the idea of relieving art from the need to produce copies of the objective world, presents his theory of 'optical-physical appearance' in the form of diagrams and captions under four headings: 'Proportionate Line and Structure', 'Dimension and Balance', 'Gravitational Curves', and 'Kinetic and Chromatic Energy'. As Sybil Moholy-Nagy emphasises in the introduction to her translation of the book, the *Bauhaus* teachers 'were interpreters of the visual as tokens of a fundamental optical and structural order that had been obscured by centuries of literary allegorism'. Since the Renaissance, art had been based on broad generalisations extracted from the Aristotelian canon of beauty, and it was Klee's aim, through the observation and analysis of the smallest manifestation of form, to reach a conclusion about the whole natural order—a reversal of the classical principle.

In another formulation of his theories (*Umgang mit Formalen Mitteln*) Klee states that it was his purpose to guide a younger generation towards a new basis of visual expression, and to an increased appreciation of the appearance of natural phenomena, by means of a vocabulary of forms which each might elaborate in his own way. The very effort of understanding his interpretation of visual commonplaces, as set out in the *Sketchbook*, taxes the mind

and enables the observer to see form with a new clarity.

The publishers are certainly justified in thinking that the ideas expressed are as applicable today as they were 30 years ago. It is however doubtful whether such specialised aspects of the *Bauhaus* training have survived in the curriculum of schools of art and architecture today. Its practical use therefore is questionable, though its reappearance serves as a reminder (if that is necessary) of the revolutionary qualities in the mind of its author. As such it is just another historical document.

The book was first published in 1925 in Munich under the title *Pädagogisches Skizzenbuch* as the second of the fourteen *Bauhaus books* (the first being Gropius's *Internationale Architektur*), edited by Walter Gropius and L. Moholy-Nagy. The original layout by Moholy-Nagy has been retained.

P. H.

Outrage, by Ian Nairn. (From ARCHITL. REVIEW, June.) 12½ × 9½ in. (96) pp. incl. pls. and pp. of illus. Architl. Press. 1955. 12s. 6d.

The ARCHITECTURAL REVIEW has reprinted its rousing indictment of 'Subtopia' in book form. At times the author risks damaging his case by overstating it, because his standards are indeed very high. Fortunately, everyone from the technical to the tabloid press has agreed that his evidence is overwhelming, and it remains to be hoped that the local councils, who are said to have received a complimentary copy, and the private citizens who are prepared to pay twelve-and-six for one, will do something about it. It is true that we are all offenders; public authorities, building societies, individuals—even architects. It is, regrettably, also true that we have too much slum clearance on our hands to be able to think of villa clearance yet. Many of the outrages are still curable, however, and all could be prevented in the future. So here is a present for influential friends with a powerful sense of indignation.

A Bibliography of Printed Works Relating to Oxfordshire (excluding the university and city of Oxford), by E. H. Cordeaux and D. H. Merry. 8½ in. xv + 411 pp. Oxford: U.P. 1955. £2 2s.

Thorough bibliographies, especially those which—like this one—include patiently dug-out periodical articles, are rare, and this county work, containing well over 4,000 items, sets a good example for future attempts in other areas. Nearly a third of the whole is classified under subjects, including Topography, History, and Architecture and Allied Arts (this with over 1,300 items); the remainder is on Individual Localities, alphabetically, with subject subdivisions. Obviously some of the architectural journals have been combed. There is an index only of personal names, including authors. Headlines for places in the Localities section, where the headings do not occur in the opening, would have been useful, and what look like page references

in the contents table should be shown as item numbers.

H. V. M. R.

Their Name Liveth. Some pictures of Commonwealth war cemeteries 1914–1918, 1939–1945. *Imperial War Graves Commission*. Vol. ii, pt. i. Wooburn House, Bucks. 1955. 5s.

The Imperial War Graves Commission have produced another volume of fine photographs of cemeteries of both world wars in Normandy, as part of the series 'Their Name Liveth.' They include the recently unveiled Bayeux Memorial and some twenty others.

The Modern Signwriter, by W. G. Sutherland, ed. Articles by W. H. Cantrill and others. (3rd ed.). 9½ in. [vi] + 134 pp. incl. pls. and other illus. Manchester: Sutherland Pubg. Co. 1954. 12s. 6d.

Eleven writers have contributed nearly 30 short articles to make a practical introduction to signwriting and cognate subjects, including painted and pen lettering, glass work and banners. Unfortunately some of the examples are hardly worthy of the book. There are specimens of italic of doubtful parentage, ruler-and-compasses Roman, and reckless 'fancy' lettering that are better forgotten.

The lay-out of the book is generally pleasant and there is a useful glossary.

How To Use Creative Perspective, by Ernest W. Watson. 10½ in. × 8½ in. 160 pp. incl. pls. and other illus. New York: Reinhold; London: Chapman and Hall. [1955.] £3.

The editor of the *American Artist* is writing primarily for the apprentice illustrator—not the architectural student. Beginning with cubes and railway lines, he proceeds rapidly to foreshortening, shadows and reflections, and some of the practical problems of drawing buildings, furniture, and much else. The book benefits from the textbook-like examples, including some by the author, many by commercial artists, and an interesting study of 'universal perspective' in a still-life by Cézanne.

Spon's Architects' and Builders' Price Book, 81st ed. 1955–56. Davis, Belfield & Everest, eds. 7½ in. (xi) + 755 pp. Spon. 1955. £1 8s.

The eighty-first edition of 'Spon' is as ever an invaluable guide to estimating, approximate estimating, day-work and fees, and much other necessary information. The Buyer's Guide has now been expanded to over 150 pages.

Architects' Working Details—vol. 3. D. A. C. A. Boyne, editor. 11½ in. 160 pp. incl. pls. and other illus. Architl. Press. 1955. £1 1s.

The third volume of this excellent series maintains the high standards of its predecessors, and has much the same scope: doors and windows, balconies, heating units, furniture and fittings, and so on. Architects will get quite a lot for their guinea.

Review of Construction and Materials

This section gives technical and general information. The following bodies deal with specialised branches of research and will willingly answer inquiries.

The Director, The Building Research Station, Garston, near Watford, Herts.

Telephone: Garston 2246.

The Officer-in-charge, The Building Research Station Scottish Laboratory, Thorntonhall, near Glasgow.

Telephone: Busby 1171.

The Director, The Forest Products Research Laboratory, Princes Risborough, Bucks.

Telephone: Princes Risborough 101.

The Director, The British Standards Institution, 2 Park Street, London, W.1.

Telephone: Mayfair 9000.

The Director, The Building Centre, 26 Store Street, Tottenham Court Road, London, W.C.1.

Telephone: Museum 5400 (10 lines).

The Director, The Scottish Building Centre, 425-7 Sauchiehall Street, Glasgow, C.2.

Telephone: Douglas 0372.

Load-bearing Walls and Brickwork. The Department of Health for Scotland has recently made a survey of 3 and 4 storey flats built by various local authorities in Scotland according to the recommendations in Codes of Practice 111:1948 and 121:101, 1951 and as a result the Department, in consultation with the Building Research Station, has prepared a memorandum on 'The construction of slender brick or block walls for buildings of more than two storeys', because 'It seemed to the Department desirable that more information and guidance should be made available to local authority technical officers, including their clerks of works, on this method of building, particularly in view of the close limits of design and the consequent need for careful workmanship and attention to detail at all stages of construction.'

The memorandum states that with slender walls it is essential that support should be provided at each floor level, and restraint given by bonding at all wall junctions. Drawings illustrate the recommended methods of providing floor level support and anchorage of roofs to gables. The dimensions of the foundations should be governed by soil conditions rather than by empirical rules.

The memorandum has been drawn up in terms of Scottish brickwork practice and is addressed to local authorities in Scotland, but the Department is prepared to issue copies of the memorandum to architects practising, or doing work, in Scotland, so far as the rather limited supply allows.

Atmospheric Pollution. The importance now being attached to the reduction of smoke and to the setting-up of smokeless zones gives point to a report recently issued by the D.S.I.R. Its title is *The Investigation of Atmospheric Pollution*, and it reports the results of observations made in the ten years ended 31 March 1954. Credence must obviously be given to these results, as they are the outcome of some 1½ million measurements of deposited matter, suspended matter (smoke) and sulphur dioxide which have been made by a maximum of about 1,400 instruments in many parts of the country.

From calculations based on the period

1944-54 an average increase of 30 per cent in ash deposit was noted on 58 sites and a decrease of 18 per cent on 29 sites. At sites ranging from Glasgow to Woolwich, smoke concentration decreased during the same period. In that period, in spite of the increased use of industrial and other fuel, there was a significant decrease in the amount of unburnt fuel particles deposited, due possibly to the increase in efficiency of combustion in those types of industrial plant which are the usual main source of these deposits. But there was a considerable increase in the deposition of ash, the main ingredient of the grit deposits. This pollutant also comes largely from industrial boilers, 'and it seems that the effect of improved techniques in grit arrestment has not yet outweighed the increased production of grit at pulverised fuel-fired installations'.

Modifications to the furnace doors of hand-fired Lancashire boilers have made it possible for the emission of smoke to be greatly decreased and the thermal efficiency of use of the fuel to be increased, often by 5 per cent or more. These smoke-eliminator doors were developed by the Fuel Research Station and are being made by several firms, and many have been fitted to industrial boilers.

The report is published by H.M.S.O. Code No. 47-70-0-55, price 7s. 6d. net.

B.R.S. Daylight Factor Meter. The Building Research Station Digest No. 80 dealt with the prediction of levels of daylighting in buildings and mentioned the B.R.S. protractors evolved for the assessment of daylighting. These were to be used in conjunction with plans and sections of the building or room interior.

The Station has recently developed an instrument for determining the daylight factor in an actual room and it is now being manufactured by Messrs. Evans Electroselenium Ltd., of Harlow, Essex. The instrument measures approximately 3 in. by 3 in. by 3 in. and its present price is £18 7s. 6d. complete with leather case. It is known as the 'Eel' B.R.S. Daylight Factor Meter and employs an 'Eel' barrier layer photo-cell which is fully cosine corrected and is connected to a sensitive microammeter. The meter scale is cali-



The B.R.S. Daylight Factor Meter

brated to read between 0 and 5 per cent daylight factor and gives adequate accuracy for practical purposes with skies whose brightness is about 600 foot-lamberts and upwards. Other ranges are provided for conditions of higher daylight factor and also enable readings to be made with skies whose brightness is below 600 foot-lamberts. A louvred mask is swung over the photo-cell when the instrument is being 'shown' the sky, and is swung back when a reading is being taken at a point in the building where the daylight factor is to be measured, which can be done directly from the meter scale.

More Catalogia. Most catalogues are concerned with a particular firm's products, but Messrs. Josiah Parkes and Sons Ltd. have produced a booklet which goes far back into the past as it describes a museum of ancient locks that Messrs. Parkes have collected. The preface to the booklet states that the locks of earlier days are of interest mainly from the historical point of view and that the antiques in the firm's museum 'have been acquired because locks being our trade it was felt to be desirable to have first-hand knowledge of the methods of our forebears in the trade and to be able to demonstrate to our many business friends how locks have changed in character over the years'.

They may have changed, but one of the items in the museum is a copy of what was perhaps the first lock ever made, a lock from Egypt of about 2000 B.C.: Messrs. Parkes add that the modern pin tumbler lock is constructed on the same principle.

Many of the old locks illustrated are ornate and exhibit much ingenuity in their construction. A key that shows some art and much more artfulness is a double-ended one, with the operating part in the middle, which might have been made by the custodian of a captive in a castle. 'If put into the lock from the outside, there would be nothing outside to indicate that the prisoner was not securely incarcerated, yet the key would enable him to get out periodically for clandestine meetings or otherwise.' Probably in those days a little palm oil made the lock work easily.

Messrs. Parkes' address is Willenhall, Staffordshire.

A New Mill Scale Remover. It is general knowledge that the removal of mill scale from steel is an essential preliminary to the application of protective coatings, but if this procedure is neglected or is carried out by inadequate methods the result may well be that corrosion and paint failure will follow.

Most steel used in building is coated with mill or other heat scales after rolling or shaping. Unlike the underlying steel this coating is resistant to corrosive attack and therefore is cathodic to the basic metal, and if corrosive agents should penetrate the surface of the scale, which may happen as it is perforated by microscopic cracks, it will ultimately break down and take the entire painting system with it; therefore the scale must be removed before painting is done.

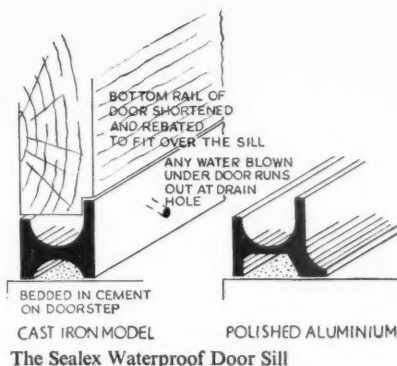
The oldest, and still most widely used, method of descaling steel is to let the scale be gradually reduced by weathering, that is, by attack from the atmosphere, but this results in the scale being detached in gradual stages and not in one piece, thus although scale may adhere tightly to certain portions of a steel member, corrosion will have taken place over areas affected by earlier liftings.

Often a shop coat primer is applied to the steelwork at the rolling mill, or descaling may be attempted by flame and shot blasting and by pickling with mineral acid, but all these methods must be used before the steelwork is erected and therefore a considerable period must elapse before the steelwork is painted, during which corrosion can set in. And there is, of course, the likelihood of impact damage during erection.

Messrs. Jenolite Ltd. have now brought out two descalers which they consider will substantially overcome the problem. These descalers are in jelly form and are applied to the steelwork after erection. Besides being easy of application to horizontal surfaces, tests have proved that the jellies will adhere to vertical surfaces long enough to allow the most tenaciously adherent scale to be removed. These pastes are called Jenolite DJ1 and DJ2. They eliminate the need for shop coating, and because the scale is to a great extent retained until after erection of the steel, the danger of severe rusting is reduced.

For full technical details of these jellies and for advice, application should be made to Messrs. Jenolite Ltd. at 13-17 Rathbone Street, London, W.1.

Sealex Waterproof Door Sill. On the principle that it is the little things that matter, this sill may be of interest, because an inward-opening external door can cause inconvenience through rain being driven in under the door in certain conditions. The Sealex sill claims to prevent this as it is in essence a semicircular section over which the bottom rail of the door is made to fit, so that any driving rain falls into the groove and is drained away through a weephole. The sill is bedded in cement on the doorstep. It is made in two materials, cast iron and aluminium. The aluminium form has a swept outer leg.



The manufacturers claim six good points for their sill: (1) it allows the mat to be placed in the correct position, (2) banishes all trouble of moisture, (3) is indestructible, (4) prevents wear on step, (5) is easily fitted and doubles life of door (because the bottom edge of rail can be painted), and (6) is cast in one piece and has no wearing parts.

The sill can be made to suit doors opening either inward or outward, and lengths run from 2 ft. 4 in. upwards. It is made by Messrs. Montague Jones, of Macclesfield, Cheshire, and the JOURNAL understands that in the North it has for many years been known as the Macclesfield Weather Bar.

Cold Rolled Sections. In a foreword to a manual recently produced by the Cold Rolled Sections Association, Sir Charles Mole [F], Director-General of Works, Ministry of Works, writes, 'The Cold Rolled Sections Association is to be congratulated on this very clear and detailed work of reference. It is obvious that a great deal of study has been given to its production and that every aspect of cold rolled design has been thoroughly investigated'.

This manual of technical reference describes cold rolled metal sections as a new industrial raw material manufactured from any metal with sufficient ductility to bend, the metal usually being steel. The process of forming makes it possible to distribute the metal so as to give a better strength/weight ratio than any other forming process of comparable cost. Various types of metal suitable for the process are then described, and a description follows of the rolling process, with illustrations of some basic shapes and maximum sizes.

Tables give the safe loads, dimensions and properties of struts and beams, areas of webs and flanges, moments of inertia, properties of materials, and weights. Plates show possible constructions and a further selection of typical sections. The manual ends with photographs of buildings in which cold rolled sections have been used.

Readers will recall that in a lecture on 'Comparisons in Modern Structural Steelwork' (JOURNAL, April 1955) Mr. D. W. Cooper spoke about cold rolled sections, saying that the designer has at his disposal an unlimited variety of shapes to apply to his requirements, and he may of course

devise his own sections. As a result, Mr. Cooper continued, the weight of metal required to do a certain job is reduced very much below what can be achieved with hot rolled sections, particularly for small and medium spans.

The secretaries of the Association are Messrs. Frank Impey and Company, Lombard House, 144 Great Charles Street, Birmingham, 3, from whom copies of the manual, price £2 2s., can be ordered.

Polyfilla. The 'Do it yourself' movement has become so widespread that for their own domestic purposes architects may like to know of one of the latest helps in doing it, the 'it' in this case being the filling of holes in brick, plaster or wood. This new aid is called Polyfilla and has been invented by Dr. Neumann, to whom paperhangers are indebted for Polycell. Polyfilla is based on cellulose and the makers claim that it does not expand or shrink and that it will not fall out when subjected to vibration. As its filling capability does not rely on expansion, cracks do not need enlarging to give anchorage. Nails and screws can be driven into it. At a demonstration held at the Building Centre a brick coated with a 1 in. layer of Polyfilla was suspended by a cord attached to a screw driven into the coating. A gentleman weighing 12½ stone then grasped the coated brick and swung himself clear of the floor. The screw held in the Polyfilla and the Polyfilla held to the brick. Polyfilla can be obtained from the usual appropriate shops at 1s. 6d. a packet.

B.S.I. Birmingham Office. The British Standards Institution have opened a sales office in the headquarters of the Birmingham Chamber of Commerce, 95 New Street, Birmingham 2, where a full and up-to-date stock of all British Standards and associated publications will be kept.

In addition to the sales counter, facilities will be provided for the inspection of British Standards by interested persons.

Codes of Practice Recently Published

C.P. 332:402:1955. **Gas Cooking Installations (School Meals).** This Code deals principally with the selection and installation of gas cooking equipment for meals in day and boarding schools and technical colleges. Specific recommendations are made regarding planning and consultation between the trades employed, and guidance is given on the siting of the various items of equipment. Various types of appliances are described and recommendations are made on points of design. An appendix gives a table of suggested sizes of equipment, drawn up to meet the requirements of the Ministry of Education. Price 3s.

British Standards Recently Published

B.S. 2652:1955. **Cord-operated Ceiling Switches.** This Standard covers this class of switch which was not included in B.S. 1299, Part 1, 1946, for tumbler switches. They may be of either the surface mounting or semi-recessed type. Price 2s. 6d.

Conference on Building Training

Held at the R.I.B.A. on 31 January 1956

Mr. Harvey G. Frost, O.B.E., in the Chair

THIS CONFERENCE WAS CONVENED by the Joint Consultative Committee of Architects, Quantity Surveyors and Builders. At the morning session, papers were read by Mr. D. E. Woodbine Parish, F.I.O.B., Mr. W. James, F.R.I.C.S., and Mr. D. H. McMorran, A.R.A.[F]. The proceedings are summarised in this article.

The Chairman opened the conference by outlining the events which had led to its being called and said that the eyes of the industry were upon them today and he hoped some general agreement for future consultation and action would follow from the conference. The building industry, he said, employed nearly one in ten of the adult male population in civil employment; new buildings accounted for about half our annual capital expenditure, and the cost of the industry's product was an important factor in almost every other industry. Not the least of the problems of this scientific age was the failure of man to devote sufficient time and thought to making parallel progress in knowledge and understanding in the sphere of human relationships. Building was teamwork, and the setting up of the Joint Consultative Committee was a step towards a better realisation of that fact.

Mr. Woodbine Parish said that the conference might prove to be one of the most important milestones in the contemporary history of building in this country. For the first time it had been made possible for a representative cross-section of the leaders in the industry to examine and carry forward the proposals for the establishment of the Joint Standing Committee contained in the report submitted to the R.I.B.A. Council by a committee which sat under the chairmanship of Mr. McMorran. There was a need to re-assess the pattern and appropriateness of the present educational arrangements in the industry and to provide for the future inter-relation and development of educational facilities and practical training on sound and logical lines to suit the constantly changing conditions that confronted the industry.

Good building and architecture were indivisible and many of the problems facing the building industry stemmed from a curious failure to correlate and co-ordinate the education and training of architects and builders. There should be a common background and close liaison between architects and builders in their approach to, and conduct of, building work. When this closer integration of architectural and building education had been achieved it might well have an impact on the present educational and training arrangements of quantity surveyors and other branches of the industry.

Much had been achieved by the McMorran committee and much must be

done on similar lines by the new Board of Building Education, recently set up by the Institute of Builders in collaboration with the National Federation of Building Trades Employers. This Board would be encouraged in its work if the interchange of opinion and information were facilitated by the establishment of a Standing Joint Committee to promote suitable developments, as suggested in the McMorran report. The architectural profession had been transformed from one consisting mainly of architects in private practice to one where the predominant volume of work was controlled by salaried official architects. Similarly the business of a builder had undergone a change; his real control had been weakened by the division of responsibility over a wide field and a different training from that of the builder of yesteryear was necessary.

Mr. Woodbine Parish then referred to the work being done by various organisations to ensure an adequate body of skilled craftsmen and to provide training for general foremen. It was in the recruitment, education and training for the higher posts in firms of master builders and contractors that the most urgent action was called for, and it was at this level that a pilot experiment of inter-related architect and builder education might be launched at one or two selected schools or universities.

The building industry was coming to realise that its industrial efficiency and productivity was in direct ratio to the ability of its leaders to create the right atmosphere in which a team spirit could exist. All human beings needed to be led and encouraged by individuals with a sense of imagination and purpose if they were to respond fully to the tasks on which they were engaged.

Mr. Woodbine Parish concluded by saying that the lack of appreciation of the importance of integrating the human factor into the whole range of professional and industrial practices was the root cause of the fragmented outlook and approach to education. The linking of architectural and building education would do much to promote higher standards of mutual respect and confidence between the various partners of the industry and hasten an improvement in the administration, direction and control of building work.

Mr. W. James began his paper by explaining that anything he said was purely personal and had no relevance to any kind of official policy. He thought that in general terms the problem was that none of the constituent members of the building industry considered that the present methods of training were entirely appropriate to the circumstances of today, when judged by the capabilities of the post-war product, but as general terms were nebu-

lous things he proposed to submit a number of practical difficulties which he considered lay hidden within the main issue.

Having outlined some of the points of difficulty, Mr. James made personal comments on some of them. On the question whether too much emphasis was being given to theory and too little to its practical application, Mr. James's view was that many architects and quantity surveyors felt that lack of practical experience was one of the root causes of the poor output of junior staff as compared with that of pre-war times, and that it was difficult in later years to make up for this fundamental lack. Syllabuses being crowded, some trainees who took full-time theoretical courses might easily become remote from practical reality. A mistaken assumption in the classroom meant nothing worse than low marks, but a similar mistake in the office or on the site might have serious practical repercussions.

Examining bodies should in future watch their examination syllabuses with a view to relating them to practice rather than to theory and limiting, rather than extending, the field covered. Consideration should be given to the possibility of establishing post-qualification courses on subjects desirable in the training of senior staff but not vital at more junior levels.

Regarding sandwich courses (alternations of full-time attendances at technical schools and places of business), Mr. James said that short cycle courses of about a week seemed to satisfy no one, while the alternations of longer cycles of a few months were not long enough. A year's unbroken full-time practical experience was the minimum term for effective results; it would be preferable for the period to be two or even three years, but that did not fit in well with school and examination curricula.

On the question how best to combine teamwork training with sectional training, Mr. James considered it vital to show that teamwork training would be of direct benefit to the building owner, a matter of supreme importance, and would in no way affect the independence of the architectural and quantity surveying professions *vis-à-vis* the contracting side of the industry.

He felt that concentration on purely technical matters might narrow the outlook, not only in building but also in the whole range of technical occupations, and serious thought should be given to means of countering it. He favoured a greater range of practical teamwork training because of the wider personal contacts against backgrounds providing a variation in approach and outlook. He mentioned the R.I.C.S. Junior Organisation, in which all types of surveyors, under the age of 34, mingled together.

To encourage a broad outlook in those likely to reach senior levels, examining bodies might consider some relaxation of their technical examination requirements in favour of suitable university graduates; post-qualification courses, not entirely confined to technical subjects, might be organised for those seeking the higher administrative positions.

The proposals of professional technical educationalists for the improvement of technical training frequently met only with criticism from practitioners, of whom the majority gave little thought to the subject of theoretical training. There should be some automatic link between the technical school attended by a part-time student and the principals of the firm in which he was employed. A measure of liaison between practitioners and the schools on this subject might lead to some two-way application whereby full-time teachers might improve their knowledge of current procedure and practitioners obtain some hints on better methods of instructing trainees.

Mr. D. H. McMorran said that the idea of holding this conference was not a new one; many people had been thinking about the possibilities of combined training in the building industry, and the Architectural Education Joint Committee, of which he had been chairman, had suggested that the R.I.B.A. should initiate a conference to discuss how the various training schemes could be brought into closer harmony. Then the Joint Consultative Committee came into being, the general object of the committee being to raise the standard of efficiency of the industry, both for its own sake and in the interest of employers—the public.

He could not help associating the poor design of so much of our building today with the purely modern notion that architecture could be taught in schools, as a kind of abstraction without a tradition, and apart from its practice as an essential part of the building industry. He was impressed by the fact that so many people, who might not know or care whether our architecture had gone wrong as an art, did know, and were caring very much, that the architectural profession seemed to be faltering in its business of providing leadership for the building industry, which was still the second largest in the country with an essential part to play in the national economy.

It was a fallacy, Mr. McMorran continued, to say that beautiful building was identifiable with 'good' or 'honest' or 'truthful' construction. In fact, a building could be thoroughly well constructed and yet have no claim to be a work of art, and some exquisite works of architecture had come to untimely ends through being too optimistically constructed. This was not to deny that in the conception of an architectural design an appreciation of constructional possibilities and limitations was at least useful and, at best, a source of inspiration. Whether the mastery of the art of architecture was best acquired in the course of a subsidised academic discipline or during the daily round and common task amongst buildings and builders, should be a matter for every student to decide for himself, according to his temperament.

The translation of a paper design into a satisfactory building required a knowledge of engineering principles, construction, building legislation, contracts, costs, management and procedure. It was in

his skill in these branches that the architect was on common ground with his fellow-workers in the industry, and it was in these subjects that he could profitably share his training with them.

Mr. McMorran then gave a brief summary of the history of architectural education through and by an elaborate examination system. The Joint Committee, to which he had referred, made recommendations which he summarised as follows: (1) The discrepancies between the various existing examinations should as far as possible be removed. (2) There should be less emphasis in examinations on so-called 'designs', and more on the various branches of building construction and professional practice. (3) The benefits of recognition (the privilege of holding exempting qualifying examinations) should be extended to approved part-time day and evening courses catering for the office pupil and junior assistant. (4) The required minimum period of practical experience should as soon as possible be doubled to two years. (5) The R.I.B.A. should seek the co-operation of other sides of the industry in putting these proposals into effect.

Mr. McMorran said that it would be noticed that those recommendations reflected a strictly practical attitude to the reforms needed in architectural education. They accepted the fact that the R.I.B.A. was not a teaching body, but that its examinations, approved for statutory purposes by the Registration Council, exerted the strongest possible influence on teachers and students.

Mr. McMorran concluded by saying that, so far as architects were concerned, the immediate and practical step to be taken was to undertake a reconstruction of the educational machine, making such alterations as would secure the adequate representation of builders, surveyors and engineers and of architects who were not mainly occupied in teaching, and also making such changes in the examination system as would ensure to the would-be architect a free and unbiased choice in his approach to the study of his profession.

DISCUSSION

Mr. P. G. Freeman [F] (Chairman of the Board of Architectural Education) said that the recognised schools of architecture were not opposed to composite and part-time courses and were extremely interested in what the Joint Consultative Committee were trying to do in this connection. It should not be assumed that only the composite or part-time course could serve the object of co-ordination in training; co-operation with the full-time school should not be ruled out.

Mr. T. E. Hall (Principal of the City of Liverpool College of Building, and representing the Association of Teachers in Technical Institutions) said he had 760 part-time architectural students who came one, two or three days a week and who must attend the college for a minimum of seven years. He had a full-time course for the R.I.C.S. intermediate examination, but in

that course there were so many subjects that it would be impossible to marry the two courses in his college. Nor could he marry with those two courses his full-time course for the Higher National Diploma in building. He had a sandwich course in civil engineering and he could marry some of the subject-matter there with the building course.

Mr. E. M. Rice [F] said that a young man wishing to enter any profession should be able to choose whether he would do so by attending a full or part-time course; if he wished to become an architect or to occupy a position of authority in any industry he must have time during his training to develop his ideas without pressure from the hurly-burly of industrial life and that was likely to be possible only in a full-time course. Practical training was essential, but it must not interfere with a young man being able to develop his ideas; that seemed the only way to produce first-class men.

He agreed that there should be some co-ordination of training between the industry and the professions. The architect should know how to operate site organisation and the management of plant and should have a good understanding of the business of building.

Dr. R. Bradbury [F] (City Architect of Liverpool) said that all agreed that there was need for co-ordination at some stage in the training in the various disciplines and he felt that that stage came when the basic discipline of a student's own profession had been taught to him.

Mr. F. Leslie Wallis (President of the Institute of Builders) stated that he was conscious that all was not right with education in building but he was also conscious that all was not right with architectural education. If architects were given more practical experience on building sites, or if there were closer co-operation in their training before they qualified, there would be fewer headaches on the site.

Mr. Norman Thomas [A] asked if basic training in practical building matters was required by an architect after he had qualified. The industry was faced with an enormous programme of work which had to be carried out in a short period of time and the young men coming out of the schools were given positions of far greater responsibility than in normal circumstances.

Mr. Woodbine Parish said he thought it unlikely that at the end of a course of study at a school of architecture, or a diploma course, anyone could be considered competent to accept responsibility. Responsibility included direction of the work of others and without practical experience a man could not hope to do that.

Mr. Ian Leslie [Hon. A] (Editor of THE BUILDER) said that today a new factor, cost, must be added to the dictum that 'commodity, firmness and delight' were the three principles of architecture, and cost could be controlled only by the fullest collabora-

tion between all sides of the industry. The various partners whose united efforts produced our buildings were expected in present conditions to learn their jobs in watertight compartments. Most of the grumbles about the shortcomings of architects and builders were due to lack of understanding by the one of how the other worked and of his problems, and how could anything else be expected with the present methods of training? There would be sufficient justification for the establishment of some course of training as was being discussed if it brought engineers, architects, quantity surveyors and builders together at an early stage of their training.

He hoped the principle would be agreed of having some live body on which all sides of the industry would be represented, its job being to keep under review and to co-ordinate individual training programmes and permit one or two experimental courses to be set up in selected parts of the country.

Mr. D. A. G. Reid (Principal of the Brixton School of Building, and representing the Association of Principals in Technical Institutions) said the British tradition was of training in practice but to some extent architecture had been an exception to that general rule. He thought there would be some advantage in adopting an arrangement of perhaps three years of full-time study and two years or more of recognised training in practice. He believed it was possible to develop a young man's mind in full-time study in a way which could not be matched by any other process. He felt sure that it would go far to remedy the present deficiencies in the architect's training if he were to spend a substantial training period in industry with a contractor.

Mr. F. M. Sleeman (N.F.B.T.E.) said that, as a provincial builder, he felt that the need in the industry was for efficiency which would lead to reduction in cost, and one of the ingredients required for that efficiency was confidence on the part of the architect that the agent knew his job and confidence on the part of the agent in the young architect.

Mr. H. A. Ackland (F.R.I.C.S.) said that quantity surveyors thought full-time training could be useful to a limited extent and that the present balance between full-time training and training in an office was the best possible in present circumstances, even if not entirely satisfactory.

Mr. D. T. Williams (A.M.I.Struct.E.) remarked that engineers had already made some move towards co-operation in the early stages; there was a common preliminary examination for structural, electrical and municipal engineers which was being developed further. The Institution of Structural Engineers were willing to co-operate in any schemes, but it might be at the post-graduate stage that they could give the greatest help.

Mr. Gerald Hill pointed out that a small but important group, the undergraduates

of Oxford and Cambridge, seemed to have been overlooked. There was no accepted course at either university which was recognised in building. What were undergraduates to do when they came down, since they would expect to earn a small salary.

Mr. Peter Trench said that he came into the industry from a university and after three years he had a fair knowledge of what went on in a builder's office. His university education had given him a broader outlook on the industry as a whole.

Mr. Woodbine Parish said they could not afford to let the young men coming down from the universities go into other industries and professions and commerce. The building industry was being by-passed.

Mr. Peter Shephard [A] suggested that it was urgent both for builders and architects to decide for themselves what they wanted to teach people coming into their jobs; it might be found that there was a large amount of overlapping. He hoped to see courses for builders at what might be called a university level which would attract into the building industry young men who now go into architecture or engineering, and they should be brought into the industry through a three- or five-year course of a more academic nature than was proposed at present, though of course some time must be spent on the building site. He would like to see such a course established in connection with a school of architecture.

Mr. W. A. Allen [A] said that the only person who could depart from conventions was the man with a clear grasp of the principles underlying what he was departing from and who knew where he was going, and he would not get this grasp except at a university-level type of course, and such education for building should be introduced as soon as was practicable; that was where the real basis for their working together was to be found. He had in mind a three- or five-year course with a specific purpose in view. That was essential to produce not only the senior management level of industry but a broader level. They could then meet the architect on his own ground.

Practice was readily picked up if one had a good grounding in theory and on that side there had been a failure in teaching the right kind of economic building to architects; there was not much about the economics of building in the present architectural courses; information existed only in limited fields; it should be applied critically to the design process, and as quantity surveyors dealt with the arithmetic of that side it was broadly their collective responsibility to provide the basis of economic thinking for the architectural profession.

Mr. Peter Trench, speaking as an individual builder, felt that they should try to do something quickly and to divide the problems into long-term and immediate. There were a few things which could be

done now. A sandwich course for builders allowed the student plenty of time with his firm to learn the practical side, and as a short-term suggestion Mr. Trench said that such students who were back with building firms for six months in the year should be able to join a course during that period, or part of it, to study subjects not covered by the ordinary building syllabus but which were broader and could also be studied by architects at a school of architecture.

Alderman P. J. Benningfield (Institute of Clerks of Works of Gt. Britain) said that there was need for co-operation between builder and builder. Different contractors did a job in entirely different ways and if they co-operated they could save money.

He did not think that if the problems of training young architects were solved the others would fall into place.

Mr. George Whitby [F] suggested that the real reason for the conference was that the public had lost confidence in the building industry. The main difficulty was that the men the industry needed were lacking; men of the right calibre would have recognised the deficiencies in the training and would have put them right. Most efficient building firms and most efficient firms of architects, he believed, were headed by men who had done that, but the structure of the industry was antiquated; it lacked national leadership.

Mr. G. O. Swayne (Board of Building Education) asked whether surveyors, and particularly architects, were prepared to acknowledge the necessity for qualification by examination to practise as a builder and, if so, whether they were willing to give tangible recognition to qualified men.

Dr. R. P. Andrews (Cement and Concrete Association) suggested that the origin of the conference was the tragedy of the divorce of the architect and the builder which took place very long ago and we now wanted them to get together again. It was better for theory to come before practice. Theoretical men should be brought in and theory be added to the practical side, which they could look at critically.

The three authors then replied briefly to the discussion.

In closing the meeting the chairman suggested that the conference should formally report back to the main committee on the following lines: 'That this Conference, being confident that the building industry could improve its standards and raise its productivity by interrelating the training of its constituent administrative branches, invites the Joint Consultative Committee of Architects, Quantity Surveyors and Builders to sponsor a representative National Advisory Committee to keep under review the current systems of training, including qualifications by examination, and to consult with responsible bodies and assist in promoting mutual developments, and to report periodically'. *The text was adopted without dissent.*

Notes and Notices

NOTICES

Fifth General Meeting, Tuesday 6 March 1956 at 6 p.m. The Fifth General Meeting of the Session 1955-56 will be held on Tuesday 6 March 1956 at 6 p.m. for the following purposes:—

To read the Minutes of the Fourth General Meeting held on 7 February 1956; formally to admit new members attending for the first time since their election.

Professor Stuart Piggott, F.S.A., F.B.A., to read a paper on 'Ritual and Architecture in Megalithic Monuments'.

(Light refreshments will be provided before the meeting.)

Science Lecture, Tuesday 20 March 1956 at 6 p.m. There will be a Science Lecture on Tuesday 20 March 1956 at 6 p.m. when Mr. Edward D. Mills [F] will read a paper on 'The External Cladding of Buildings'.

(Light refreshments will be provided before the lecture.)

R.I.B.A. Dinner, Friday 6 April 1956. The R.I.B.A. Dinner this year will be held on Friday 6 April 1956 at Guildhall, London, E.C.2. The cost of tickets is £3 10s. 0d. each, inclusive of wines, cigars, etc. Evening dress with orders and decorations or uniform will be worn.

A form of application is enclosed with this issue of the JOURNAL and members are asked to send in their applications at the earliest possible moment, accompanied by the necessary remittance which must be by crossed cheque or money order made payable to the Secretary R.I.B.A.

Session 1955-1956. Minutes IV. At a Special General Meeting, held on Tuesday 10 January 1956 at 6 p.m. Mr. C. H. Aslin, C.B.E., President, in the Chair.

The Minutes of the Special General Meeting held on Tuesday 20 December 1955 were taken as read, confirmed and signed as correct.

The President stated that this Special General Meeting had been called for the purpose of confirming the Resolution passed at the Special General Meeting held on Tuesday 20 December 1955 approving the adoption of the revised Bye-laws 18, 28 (1) (e), 33, 34 and 35.

Mr. Kenneth Cross [F] moved that the following Resolution passed at the Special General Meeting held on 20 December 1955 be confirmed:—

'That subject to the approval thereof by the Lords of Her Majesty's Most Honourable Privy Council the amendments to the Bye-laws as set forth in the notice calling this meeting be made and adopted by the Royal Institute'.

The Hon. Secretary seconded the Resolution. The President then put the Resolution to the Meeting and it was carried.

The proceedings closed at 6.5 p.m.

Session 1955-1956. Minutes V. At the Third General Meeting of the Session 1955-1956 held on Tuesday 10 January 1956 at 6.5 p.m. Mr. C. H. Aslin, C.B.E., President, in the Chair.

The meeting was attended by about 130 Members and guests.

The Minutes of the Second General Meeting held on Tuesday 6 December 1955 were taken as read, confirmed and signed as correct.

The following members attending for the first time since their election were formally admitted by the President:—*Fellows*: J. W. A. Cubitt, M.B.E., R. P. S. Hubbard, E. A.

Johnson, J. B. Noble, W. G. Plant, N. A. Royce, K. J. V. Watson, Arthur Wilkinson. *Associates*: M. G. Booth, J. J. A. Cameron, R. W. Mutton, J. Reeb, D. F. Richards, Sydney Townsend.

The Secretary read the Deed of Award of Prizes and Studentships made by the Council under the Common Seal.

Sir E. Owen Williams, K.B.E., having read a Paper on 'The Motorway and its Environment', a discussion ensued and on the motion of the Right Hon. Lord Winster, K.C.M.G., seconded by Mr. G. A. Jellicoe, M.T.P.I., P.P.I.L.A. [F], a vote of thanks was passed to Sir E. Owen Williams by acclamation and was briefly responded to.

The proceedings closed at 7.35 p.m.

Session 1955-1956. Minutes VI. At the Fourth General Meeting of the Session 1955-1956, held on Tuesday 7 February 1956 at 6 p.m.

Mr. C. H. Aslin, C.B.E., President, in the Chair.

The meeting was attended by about 280 Members and guests.

The Minutes of the Third General Meeting held on Tuesday 10 January 1956 were taken as read, confirmed and signed as correct.

The President delivered his address to architectural students and Mr. G. Grenfell Baines, A.M.T.P.I. [A], read his review of the work submitted for the Prizes and Studentships, 1956.

On the motion of Sir Stephen Tallents, K.C.M.G., C.B., C.B.E. [*Hon. A.*], seconded by Mr. Howard V. Lobb, C.B.E. [F], a vote of thanks was passed to the President and Mr. Baines by acclamation, and was briefly responded to by them.

The presentation of prizes was then made by the President in accordance with the Council's award.

The proceedings closed at 7.55 p.m.

British Architects' Conference, Norwich, 30 May-2 June 1956. A cordial invitation is extended to all members and Students of the R.I.B.A., the Architectural Association and the Allied Societies to attend the Conference to be held at Norwich from 30 May to 2 June.

Full details of the programme and the application form are enclosed with this issue of the JOURNAL. Application forms must be returned to the Secretary R.I.B.A. *not later than 11 May*.

British Architects' Conference, Norwich, 30 May-2 June 1956 LIST OF HOTELS

Name	Address (Norwich, unless otherwise stated)	Total No. of Guests	Bed and Breakfast	Garage
*Royal	Prince of Wales' Road	140	25/6	Nearby
*Maid's Head	Tombland	72	25/6	Yes
*Bell	Orford Hill	84	25/6	Parking
*Castle	Castle Meadow	103	25/6	Parking near
Annesley	Newmarket Road	50	21/-	Parking
Cavell	Tombland	32	21/-	Park near
Lansdowne	Thorpe Road	35	21/-	Parking
*Great Eastern	Prince of Wales' Road	56	21/-	Parking
Innisfallen	32 Unthank Road	40	18/6	Parking
Clarendon	Clarendon Road	30	18/6	
Heathcote	23 Unthank Road	20	18/6	Parking
†Town House	Thorpe—2 miles	36	21/-	Yes
St. Lucia	Thorpe—2 miles	40	18/6	
†Caister Hall Club	Caister—3 miles	18	21/-	Yes
*Swan	Horning—10 miles (on Broads)	12		Yes
†Petersfield	Horning—10 miles (on Broads)	9		Yes
*King's Head	Wroxham—7 miles (on Broads)	10		Yes
Abbey	Wymondham—9 miles	20		Yes

* Licensed.

† Club Licence.

In case of difficulty, members should communicate with Mr. W. G. Knapton, Secretary to the Norwich and District Hotels and Restaurants Association, 116 Thorpe Road, Norwich (Telephone No. Norwich 24461).

Members are again reminded that hotel reservations should be made before 31 March as after this date the hotels cannot undertake to keep rooms unless definitely booked.

Annual Subscriptions and Contributions. Members' subscriptions and Students' contributions for 1956 became due on 1 January.

	£	s.	d.
Fellows	7	7	0
Associates	4	4	0
Licentiates	4	4	0
Students	1	11	6

For members resident in the trans-oceanic Dominions who are members of Allied Societies in those Dominions, and for members resident overseas in areas where no Allied Society is available, the amounts are as follows:

	£	s.	d.
Fellows	4	4	0
Associates	3	3	0
Licentiates	3	3	0

Formal Admission of New Members at General Meetings. New members will be asked to notify the Secretary R.I.B.A. beforehand of the date of the General Meeting at which they desire to be introduced and a printed postcard will be sent to each newly elected member for this purpose. On arrival at the R.I.B.A. on the evening of the General Meeting new members must notify the office of their presence and will then take their places in the seats specially numbered and reserved for their use. On being asked to present themselves for formal admission, the new members will file out in turn into the left-hand aisle and after shaking hands with the President (or Chairman) will return to their seats by way of the centre aisle.

Formal admission will take place at all remaining Ordinary General Meetings of the present Session, with the exception of the following:—10 April 1956: Presentation of Royal Gold Medal.

The R.I.B.A. Appointments Department. Members and Students of the R.I.B.A. and the Allied Societies are reminded that the services of the Institute's Appointments Department are available to employers requiring assistants and to assistants seeking salaried employment.

Employers are invited to notify the Secretary of vacancies in their offices, giving details of the work to be done, the qualifications required, and salaries offered.

Assistants should preferably call at the offices of the Appointments Department, but if this is not practicable they should obtain from the Secretary an application form, which when completed and returned to the Institute will enable the Department either to send the applicants particulars of vacancies suitable to their qualifications and requirements or submit their names for vacant posts.

Members and Students seeking official appointments should note that normally these are fully advertised in the weekly professional press, and that therefore the Appointments Department do not as a rule notify them to those on the register.

The Institute will also be glad to advise on most matters concerning architectural employment, including overseas appointments.

BOARD OF ARCHITECTURAL EDUCATION

The R.I.B.A. Final Examination, November-December 1955. The R.I.B.A. Final Examination was held in London, Leeds, Manchester, Newcastle, Edinburgh and Belfast from the 23 November to the 2 December 1955.

Of the 381 candidates examined, 143 passed as follows:—

Passed Whole Examination	101
Passed Whole Examination, subject to approval of Thesis	2
Passed Part 1 only	40
	<hr/>
	143

238 candidates were relegated.

The successful candidates are as follows:—

Baird: R. L. J.	Guest: Roger
Barnes: J. F. L.	Hamilton: A. S.
Birmingham: P. J.	Haslam: Miss M. J.
Bharucha: B. A.	Heffer: Michael
Billingham: M. H.	Heywood: Geoffrey
Bishop: Christopher	Hills: D. W.
Bloom: David	Hodgson: I. R.
Bourchier: C. D.	Holt: L. A.
Briggs: M. J. (Distinction in Thesis)	Horne: Miss J. D.
Broughton: K. J.	Ickeringill: A. J.
Brown: G. A.	Jessop: I. J.
Burnett: Miss R. M.	Jordan: R. V.
Burnie: R. C.	Keen: D. F. C.
Butterworth: N. A.	Kerslake: T. G.
Carter: R. R. G.	Kinnair: Jack
Cashin: A. M.	Knott: John
Cherry: J. C.	Kolek: Z. E.
Collins: Bryan	Lee: J. W.
Cradock: P. P.	Lewandowski: W. J.
Crick: Thomas	Lloyd: J. S.
Davies: C. F.	Longley: J. P.
Dell: Kenneth	McDonald: William
Denore: B. B.	McEachern: R. H.
Dietz: J. E. M.	McLaren: D. P.
Dixon: M. J.	Marsden: T. B.
Down: P. A.	Martin: D. R. J.
Fineberg: Basil	Mathias: J. W. R.
Finlason: E. G.	Mynot: F. N.
Fisk: R. A.	Nandhra: M. S.
Forrest: D. W.	Nott: C. J.
Foster: M. E. (Distinction in Thesis)	Oliver: K. A.
France: J. K.	Parker-Jones: P. E.
Gostage: A. D.	Patel: C. G.
Granelli: Mrs. M. E. L.	Poole: G. P. F.
*Gray: J. R.	Rees: R. S. L.
	Rennie: J. N.
	Richards: Bill
	Roberts: David

Robinson: J. W.
Sadler: A. J.
Sale: R. W. I.
Saunders: T. W.
Seal: M. T.
Sharpe: D. M. C.
Sheldon: Stephen
Short: O. P.
Sikorska: Mrs. Irena
Simmons: E. B.
Smith: Kenneth R.
Stephenson: Mrs. L. A.
Stevens: B. J.
Stimpson: A. J.
Straiton: J. T.
Toffolo: Joseph

Part 1 only

Arnold: Martin
Ball: G. A.
Bennett: J. H.
Bolt: P. B.
Bowen: H. T.
Bradley: Samuel
Brooks: M. A.
Buckman: D. J.
Buczynski: J.-K.
Clements: M. F.
Collins: A. J. W.
Dadge: N. J.
Davies: W. D.
Firth: Kenneth
Gallimore: A. K.
Gibson: K. R.
Goldsmith: J. W.
Hall: Miss Rosemary
Hambrook: A. W. F.
Honer: P. W.

*Subject to approval of Thesis.

The Special Final Examination, November-December 1955. The Special Final Examination was held in London, Leeds, Manchester, Newcastle, Edinburgh and Belfast from the 23 November to the 2 December 1955.

Of the 269 candidates examined, 62 passed as follows:—

Passed Whole Examination	47
Passed Part 1 only	14
Passed Part 2 only	1
	<hr/>
	62

207 candidates were relegated.

The successful candidates are as follows:—

Whole Examination

Anag: P. D.
Ashton: Ronald
Ashton: Stanley
Barber: J. P.
Bishop: K. G.
Brown: David
Cawthra: M. F. E.
Charles: W. R.
Chuter: N. F.
Cook: S. G.
Corline: E. G.
Cross: M. M.
Dando: L. C.
Dewar: David
Dunster: Peter
Evans: G. T.
Fielding: M. L.
Fitzgerald: J. D.
Ford: K. W.
Forman: Robert
France: A. V.
Goodfellow: R. E.
Hagell: R. E. J.
Jess: J. H.

Tong: Peter
Twells-Grosse: Mrs. H. G.
Tyrer: S. N.
Vaughan: G. W. B.
Westrope: K. L.
Wilkinson: A. J.
Williams: E. T. (Distinction in Thesis)
Williams: Watcyn
Wimbs: J. B.
Wolpert: D. B. J.
Wood: Barrie
Wood: J. P.
*Worts: J. B.
Young: David

Honigsfeld: M. J.
Hope: Miss B. M.
Horne: D. D. G.
Lester: Miss A. M.
Metcalfe: J. A.
Mundell: J. E.
Peto: R. J.
Pummell: D. K.
Pye: J. R.
Reeves: J. F.
Riley: Kenneth
Roberts: A. F.
Russell: Barry
Sagasti: Valentin
Seaman: K. J.
Shaw: Eric
Sibley: W. A.
Warwick: E. J.
Wilnder: P. S.
Worthington: R. G.

Part 1 only

Carter: B. B.
Haughey: P. J.
Jones: Albert F.
Kuvalekar: K. S.
Lane: D. J.
Loney: W. P.
Luetchford: Hugh

Part 2 only

Brading: W. W.

The following candidates have also passed the Special Final Examination:—

Englefield: G. S. Severs: A. P.

R.I.B.A. Intermediate Examination. The R.I.B.A. Intermediate Examination was held in London, Plymouth, Manchester, Leeds, Newcastle, Edinburgh and Belfast from 4 to 10 November 1955.

Of the 471 candidates examined, 183 passed and 288 were relegated.

The successful candidates are as follows:—

Adu-Donkor: M.
Alker: Thomas
Allam: P. J.
Allawi: I. H. A.
Auger: G. C. B.
Aylward: D. R.
Bailey: D. W.
Barratt: C. W.
Baxter: D. R.
Belcher: J. A.
Bell: J. R.
Berney: Keith
Bishop: J. R.
Blundell: K. J.
Bond (Miss): M. E.
Botting: E. K.
Bottomley: Colin
Braddock: M. I.
Brettell: K. G.
Briggs: C. A.
Bristow: J. A.
Bromley: C. J.
Broughton: B. J.
Brown: B. W. G.
Brown: F. E.
Bryan: J. D.
Burgess: J. R. L.
Burley: R. C.
Buss: R. M.
Butcher: M. J.
Cable: B. P.
Campbell: Frederick
Campbell: M. C.
Cannon: P. J.
Carpentier: W. G.
Carrall: G. J.
Chick: A. J. P.
Clark: N. C.
Cole: Peter
Conn: M. F.
Cousens: J. R.
Coward: David
Davies: R. S. I.
Davis: P. A.
Deakins: P. J.
Dickson: R. A.
Dixon: M. E.
Drake-Brockman: R. A. H.
East: D. B.
Ede: A. J.
Edgcombe: M. J.
Ellis: H. W.
Eyre: C. B.
Fallon: J. P.
Fearneley: J. V.
Feltham: K. R.
Ferris: D. M. V.

McDonagh: Brendan
MacGregor: D. R.
Stancel: Jan
West: D. J.
Wildgoose: Alexander
Wilkins: C. P.
Wornell: A. J. C.

*Forrest: Bruce
Gaunt: J. W.
Gautier: Charles
Gilmore: W. J.
Ginever: J. A.
Golding: L. A. J.
Gott: John
Granelli: Remo
Gray: J. E.
Greenhalgh: Roy
Greenwood: P. B.
Grimes: Bernard
Grubb: D. W.
Gurmin: D. W.
Hale: D. T.
Hamer: Brian
Hampton: C. J.
Hands: Raymond
Hanson: C. S.
Hansen: G. V.
Harman: G. A.
Harris: D. P.
Hawkins: R. W.
Hinton: M. W.
Hockings: R. G.
Holliday-Scott: J. W.
Holmes: John
Hookham: J. F.
Huddleston: R. G. C.
Hughes: A. V.
Illingworth: G. E.
Jackson: Alan
James: B. C.
Jeffels: M. W.
Jenvey: M. T.
Jones: Frank
Jones: M. M.
Kefford: P. E.
Kendall-Torri (Miss): S.
Knight: R. S.
Langton: Reginald
Lascelles: J. A. E.
Law: M. J.
Lawson: J. M.
Lewis: P. W.
Linford: R. N.
Long: M. J.
Lord: T. L.
Lunn: Clifford
McCormack: J. A.
MacGregor: J. S. K.
Manning: R. A.
Marsh: M. J.
Martin: C. F.
Matthews: A. J.
Monteith: J. B.
Moody: D. G. A.

Moody: J. A.
 Moran: A. J.
 Morey: Peter
 Morgan: Alan
 Morris: J. L.
 Mulley: B. J. K.
 Mullins (Miss): M. J.
 Nesbitt: J. A.
 Newton: D. H.
 Nicholson: D. R.
 Norris: D. R.
 Norris: Leslie
 Odgen: F. G.
 Palmer: W. K.
 Palmieri (Miss): M. J.
 Paul: R. G.
 Pearlman: Wolfgang
 Pepper: E. B.
 Peters: A. C.
 Pink: G. C.
 Portbury: A. F.
 Pritchard: E. W.
 Quilter: E. C.
 Ransley: F. D. D.
 Renhard: John
 Ridlington: R. M.
 Robbins: G. L.
 Rogers: M. C.
 Rose: David
 Rosie: T. A.
 Round: A. B. H.
 Sadler: M. R.
 Scott: A. G.
 Smith: B. G.
 Smith: J. P.

Soye: W. A.
 Stedman: G. G.
 Stinchcombe: M. A.
 Stirk: John
 Stobie: G. J.
 Stubbings: P. J.
 Taylor: A. K. S.
 Taylor: Antony
 Taylor: E. R.
 Thomas: W. T.
 Thompson (Mrs.): L. W.
 Thorpe: Percy
 Tomlin: D. F.
 Trigg: M. S.
 Trimble: R. H.
 Tyler: C. J.
 Valentine: John
 Venping: P. G.
 Wall: Trevor
 Walton: T. W. K.
 Warns: C. M.
 Watson: J. N.
 Watson: Peter
 Weddle: Brian
 Wheeler: D. E. G.
 Willars: D. T.
 Willcox: A. G. A.
 Williams: Gwyn
 Winsor: S. A.
 Woods (Miss): M. E.
 Woodward: William
 Woolstone: B. S. J.
 Worboys: R. J.
 Youett: G. A.

* Subject to approval of History Thesis.

R.I.B.A. Special Final Examination: Minimum Age Limit. Candidates who intend to apply for admission to the R.I.B.A. Special Final Examination are reminded that the age limit will be raised from 30 to 35 with effect from 1 January 1958.

COMPETITIONS

Manhattan Redevelopment: International Competition. The publishers of *U.S.A. Tomorrow* invite architects, city planners, engineers and all others identified with these or allied professions to submit schemes for the redevelopment of the mid-town area of Manhattan. There is no undertaking that any award-winning entry will be used.

Assessors: Mr. Charles Abrams, Professor Percival Goodman, Mr. Jose Luis Sert, Mr. William W. Wurster, Mr. Maurice E. H. Rotival.

Premiums: \$5,000, \$2,500, \$1,500, \$1,000.
 Last day for submitting schemes: 1 June 1956.
 Conditions may be obtained on application to: 'U.S.A. Tomorrow', Manhattan Redevelopment Competition, 210 Fifth Avenue, New York 10, N.Y., U.S.A.

Dwellings for Old People, East Horsley, Surrey. The Architects' Benevolent Society Homes Trust invite architects in Great Britain, Northern Ireland or the Republic of Ireland to submit in competition designs for 20 new dwellings for Old People and Warden's accommodation at East Horsley, Surrey.

Assessors: Mr. H. S. Goodhart-Rendel, C.B.E. [F], Mr. Arthur W. Kenyon, C.B.E., M.T.P.I. [F], Mr. G. Grenfell Baines, A.M.T.P.I. [A].
 Premiums: £100, £75.
 Last day for submitting designs: 6 April 1956.
 No questions will be answered.
 Conditions may be obtained on application to: The Secretary, Architects' Benevolent Society, 66 Portland Place, London, W.1.
 Deposit: £1 1s. 0d.

City and Royal Burgh of Perth: Competition for the Lay-out of Buildings, etc. The Town Council of Perth invite architects practising in Scotland to submit designs in competition for the lay-out of buildings, roads, parking-spaces, etc., and for shops, offices and houses in a central area of the town.

Assessor: Mr. Robert J. Naismith, M.T.P.I., F.R.I.A.S. [A].

Premiums: £450, £375, £250.
 Last day for submitting designs: 30 April 1956.

Conditions may be obtained on application to the Town Clerk, City Chambers, Perth.
 Deposit: £2.

New National Opera House at Benelong Point, Sydney, Australia: International Competition. The Government of the State of New South Wales invite architects who are members of their respective architectural institutes in any country in the world to submit designs in competition for a proposed National Opera House, to be erected on Benelong Point, Sydney, Australia.

Assessors: Professor H. I. Ashworth, M.A.(Arch.), F.R.A.I.A. [F], Sydney; Mr. Cobden Parkes, F.R.A.I.A. [F], Sydney; Dr. J. L. Martin, M.A. [F], London; Mr. Eero Saarinen, A.I.A., Michigan, U.S.A.

Premiums: £A5,000, £A2,000, £A1,000.
 Last day for dispatching designs: 12 noon, 3 December 1956.

Last day for questions: 12 noon, 15 May 1956.

Every intending competitor must register his name and address in writing with the Secretary of the Opera House Committee not later than 15 March 1956.

Conditions may be obtained on application to the Secretary of the Opera House Committee, c/o Department of Local Government, Bridge and Phillip Streets, Sydney, Australia.
 Deposit: £A10.

International Competition of Ideas Regarding the Surroundings of Cologne Cathedral. The City of Cologne invites planners to submit in competition schemes for the redevelopment of the area surrounding Cologne Cathedral.

Assessors: Herr Kelter, Cologne; Herr Riphahn, Cologne; Professor Hillebrecht, Hanover; Herr Steiner, Zürich; Professor Weyres, Cologne; Professor Baader, Bonn; Herr Pecks, Cologne; Professor Leibbrand, Zürich; Herr Schüssler, Cologne; Dr. Adenauer, Cologne.

Premiums: 20,000 DM, 14,000 DM, 10,000 DM, 6,000 DM.

The City of Cologne will also purchase 5 entries at 2,000 DM each.

Last day for submitting designs: 12 noon, 30 June 1956.

Conditions may be obtained on application to Städtebauamt der Stadt Köln, Stadthaus, Gürzenichstrasse.

Deposit: 100 DM.

International Competitions. The following International Competitions are at present being considered by the International Union of Architects, who are negotiating the conditions with the promoters in each case.

(a) Competition for the construction of the Sanctuary of the Madonna delle Lacrime in Syracuse.

Promoters: the Working Committee for the Sanctuary of the Madonna delle Lacrime.

(b) Competition for a monument in honour of Generalissimo Doctor Raphael Leonidas Trujillo Molina in the Dominican Republic.

Promoters: Junta Ejecutiva pro Celebracion del 25 Aniversario de la Era de Trujillo.

(c) Competition for a monument in New Delhi to commemorate the 2,500th centenary of Buddha's Enlightenment.

Promoted by the Government of India.

In each case the Secretariat of the I.U.A. have examined the published conditions of the Competitions and found them to be generally unsatisfactory and not in accordance with the standard regulations for International Competitions approved by UNESCO (R.I.B.A. Kalendar, page 812), on the advice of the International Union of Architects. Member nations of the I.U.A. have accordingly been warned not to participate, but negotiations are taking place between the I.U.A. and the promoters with a view to bringing the published conditions into conformity with the standard regulations and a further note will be published as soon as the conditions are reported by the I.U.A. to be satisfactory.

ALLIED SOCIETIES

Birmingham and Five Counties Architectural Association. Annual Dinner and Dance. The annual dinner and dance of the Birmingham and Five Counties Architectural Association was held on Friday 20 January. The President, Mr. Stansfeld T. Walker [F] was in the chair, and among the guests were Mr. C. H. Aslin, C.B.E., President R.I.B.A., and Mrs. Aslin; the Lord Mayor of Birmingham, Alderman A. L. Gibson, J.P.; the editor of the BIRMINGHAM POST, Mr. William Vaughan Reynolds; Mr. E. Steward Smith [F], President of the Berks, Bucks and Oxon Architectural Association; Mr. F. C. Levitt [L], President of the Northamptonshire, Bedfordshire and Huntingdonshire Architectural Association; Mr. J. H. Lloyd Owen [A], President of the Leicestershire and Rutland Society of Architects; Mr. C. D. Spragg, C.B.E., Secretary R.I.B.A.; and Mr. Michael J. S. Clapham.

Mr. Vaughan Reynolds proposed the toast of 'The City' and the Lord Mayor responded. The Lord Mayor then proposed the toast of 'The R.I.B.A. and its Allied Societies' and Mr. Aslin replied. The toast of 'Our Guests' was proposed by Mr. Walker and replied to by Mr. Clapham.

GENERAL NOTES

Fifty Guineas for Planning Essay. The Royal Society of Health announces that in connection with its John Edward Worth Competition it is proposed to award a sum of fifty guineas for the best essay on 'The Planning, Lay-Out and Administration of a Large Caravan Site'. Full details can be obtained from the Secretary, Royal Society of Health, 90, Buckingham Palace Road, S.W.1.

Lethaby Lectures. Mr. Basil Ward, Hon. A.R.C.A. [F], Lethaby Professor of Architecture at the Royal College of Art, will give the sixth of his series of lectures on 'W. R. Lethaby and his Times' on Monday 19 March at 5 p.m. in the lecture theatre of the Victoria and Albert Museum, South Kensington.

Aluminium Development Association. Structural Aluminium Research Scholarship. The Institution of Structural Engineers accepted in 1954 an offer by the Aluminium Development Association of a research scholarship to the value of £400 a year to enable the holder to undertake research on some aspect of the application of aluminium alloys to structures. The scholarship is awarded in alternate years for a two-year period, and the first holder is nearing the end of his tenure of the scholarship. It is the intention of the Institution to make the next award of this scholarship in 1956 with

a view to the successful applicant beginning his investigations at the beginning of the university session in October next.

Entries for the scholarship to be awarded this year close on 31 March 1956.

The scholarship is administered by the Institution and further particulars, together with forms of entry, should be obtained from the Secretary of the Institution of Structural Engineers, 11 Upper Belgrave Street, London, S.W.1.

Truscon Travelling Scholarship. The Trussed Concrete Steel Co. Ltd. of Lower Marsh, London, S.E.1, offer a Travelling Scholarship of £125 to enable an Associate of the R.I.B.A. to undertake a continental tour of about three weeks' duration. The winner will be accompanied by a member of the company's technical staff awarded a similar scholarship and they will be required jointly to study interesting reinforced concrete work on the Continent of Europe with particular reference to collaboration between architect and engineer. A joint report will be prepared, the use and copyright of which will remain at the disposal of The Trussed Concrete Steel Co. Ltd. Applicants must be under 35 years of age on 1 April 1956 and must provide evidence of their office experience and of their special interest in the subject of the scholarship, i.e., the use in contemporary architecture of reinforced concrete.

Applications must be submitted by 30 March 1956 to the Secretary, The Trussed Concrete Steel Co. Ltd., Lower Marsh, S.E.1, and must contain the following particulars: (a) Age. (b) Architectural education. (c) Academic qualifications. (d) Present occupation or employment. (e) Evidence of the candidate's suitability for appointment to the scholarship. A knowledge of one or more European languages would be of value. (f) The names of two persons to whom reference may be made regarding the candidate's fitness for appointment to the scholarship.

The applications will be considered by a Selection Committee consisting of Mr. C. S. White [F], Mr. G. Grenfell Baines [A], and a Director of The Trussed Concrete Steel Co. Ltd.

R.I.B.A. Golfing Society. The Annual Dinner was held on 20 January 1956 at the Milestone Hotel, Kensington.

Owing to the illness of F. T. Smith, the retiring Captain Felix Wilson, the Captain for 1956, took the chair. The toast of the Society was proposed by the retiring President of the London Master Builders Association Golfing Society and present Captain, Laurence Holloway. He referred to the good fellowship which existed between architects and builders who played golf. How beneficial it would be, he said, for the industry as a whole if the relationship between the two sides could be as pleasant as existed between the golfing architects and builders. Sir Giles Gilbert Scott, the President of the R.I.B.A.G.S. replied.

Felix Wilson proposed the toast of the Guests who included: The Captain of the Chartered Surveyors Institute G.S., Monty Thackray; The Secretary of the L.M.B.A.G.S., Percy Bates; The Captain of the Builders Alliance G.S., L. J. Trower and the Secretary, David Hill.

The R.I.B.A. Golfing Society played a match against the Oxford University Divots on 28 January. Although the match was played in appalling conditions, some exciting and enjoyable golf resulted. In the Singles, Oxford gained a lead of five to one. As the Foursomes played in the afternoon resulted in two wins for each side, the result of the match as a whole

was a win for Oxford. In the top match in the Singles, J. E. Behrend and R. G. Scott halved their match. In the afternoon R. G. Scott and Felix Wilson, the architects' captain, beat J. E. Behrend and W. E. Haines 3/1. As the match was played on level terms against one of the strongest junior sides in the country, the architects are to be congratulated upon their performance.

Exhibition of Paintings by Curt Herrmann. An exhibition of paintings by Curt Herrmann (1854-1929), a contemporary and friend of Bonnard, Matisse, Signac and van de Velde, has been arranged by his son, Mr. F. H. Herrmann [F], who would like his friends in the architectural profession who may be interested to know of this exhibition. It is being held at the Matthiesen Gallery, 142 New Bond Street, W.1, until 24 March. A previous exhibition of Curt Herrmann's work was held at the Ashmolean Museum, Oxford, last July and attracted wide interest.

At 40 years of age Curt Herrmann gave up a successful career as a portrait painter to devote himself to Neo-Impressionism, of which he became Germany's outstanding exponent. Many of his works are in the principal art galleries of Germany. The present exhibition illustrates his development.

Obituaries

Geoffrey Hubert Fairweather [F], senior partner in the firm of Pite Son & Fairweather, died on 6 November 1955, aged only 42.

Mr. Fairweather trained at the Regent Street Polytechnic and served his articles with the firm. He was awarded a distinction in thesis. He became a partner in 1946.

His principal architectural works comprised the new chemistry building for the University of Aberdeen and extensions to the medical school there; a new ward for the Royal Aberdeen Hospital for Sick Children, a blood transfusion unit for Aberdeen Royal Infirmary, a new operating theatre unit for the Aberdeen Maternity Hospital, an out-patients' department for Woolwich Memorial Hospital and twin operating theatres and fracture clinic for Doncaster Royal Infirmary; the war memorial and a new science block for Cranleigh School; Maidstone Shepway County Primary Junior School; a new dining room and kitchen for Oak Bank Open Air School; flats for the Borough of Sutton and Cheam; and private houses in Kent.

Mr. Fairweather served on the R.I.B.A. Hospitals Committee.

Gilbert T. F. Gardner [Retd. F], past Chairman of the Oxfordshire Society of Architects, died on 11 October, at his home in Oxford.

Gilbert Gardner was the son of an Oxford college servant. He began his education at the old St. Ebbe's Boys' School, which was one of the few schools then to teach geometry and drawing. The Rev. Arthur Tollit began to take an interest in him when he was a chorister at Holywell Church, and eventually Gardner was articled to Mr. Tollit's father, who was county surveyor for Oxfordshire and Berkshire. He later succeeded to the practice. He was elected Licentiate in 1911 and Fellow in 1927.

For some years Mr. Gardner was architect to the Oxfordshire Territorial Association and designed several Territorial headquarters and some open-air rifle ranges. In 1911 he built the first large garage in Oxford—the Morris garage in Longwall Street—and later the

Clarendon and Randolph garages. He also designed the Headington School for Girls, the Franciscan Monastery in Ifley Road, the Roman Catholic Church at New Headington, the Wesley Memorial Hall in New Inn Hall Street, and a number of public houses, besides hunt kennels, banks and business premises and dwelling houses. He was responsible for what is believed to have been the first steel-framed and reinforced concrete building erected in Oxford—a warehouse building for Messrs. Arthur Cowley in Park End Street.

Sidney Thomas Pyle [L], of the firm of Pyle and Saint, Cirencester, died on 24 July, aged 63.

Works attributed to Mr. Pyle are: the reconstruction of Peplow Hall, Salop; the reconstruction of Kemble House, Cirencester, extensions and alterations to Rossley Manor, Cheltenham, and various Cotswold houses, farm buildings and public houses. Mr. Pyle joined in partnership with Mr. A. P. Dowglas in 1933 and in 1946 with Mr. A. Saint, A.M.T.P.I., A.R.I.C.S. [A], who now carries on the practice.

Henry Martin Luyken [F] died on 31 July, aged 63.

Mr. Luyken, who studied art at Camden School of Art, Southend-on-Sea, and qualified in architecture at the Northern Polytechnic (London) was better known as an artist in water-colour and etching than as an architect. He exhibited at various London art galleries and his drawings, sketches and articles on sketching were published in *IDEAL HOME* magazine, in architectural journals and in *THE LAND WORKER*.

Benjamin Donaldson [A], partner in the firm of L. J. Couves and Partners, of Newcastle upon Tyne, died on 17 September, aged 66.

Mr. Donaldson was architect for a number of factories for the North-Eastern Trading Estates and housing for the North-Eastern Housing Association at Maryport and, latterly, for generating stations at North Lees, Dunston, Stella and Blyth, on the north-east coast.

William Taylor Loveday [A] died on 15 August, aged 76.

Mr. Loveday was educated at Rugby School and after serving his articles with Mr. Mills of Banbury and spending some time in Leicester and London as assistant with various firms he returned to the town of Rugby to practise. He carried out various works for the school—the tuck shop and alterations and additions to various boarding houses and to the music and science schools. He also built the Masonic Hall, Rugby, a sun pavilion and a nurses' home for the hospital of St. Cross.

During the First World War Mr. Loveday was commissioned in the Oxford and Bucks Light Infantry. At the time of the Second World War he left Rugby and went to Cranleigh School, Surrey, where his brother was headmaster, as assistant master.

Mr. Loveday served on the Rugby Urban District Council and on the first Rugby Borough Council. His practice (Loveday and Davis) is being continued by his partner Mr. R. V. Davis [A].

Walter William Hitchens [Retd. L] died on 19 October 1955, aged 73.

Mr. Hitchens at his retirement in 1947 was senior lecturer and tutor in building construction and surveying at Reading University, having joined the staff of the then university college in 1908 as an assistant in the technological department. He had been a lecturer since 1913.

Notes from the Minutes of the Council

MEETING HELD ON 10 JANUARY 1956

1. **The Royal Gold Medal 1956.** The Secretary reported that H.M. The Queen had been pleased to approve the recommendation of the Council that the Royal Gold Medal for the Promotion of Architecture in the year 1956 be awarded to Dr. Walter Gropius, Honorary Corresponding Member, U.S.A.

2. **New Year Honours.** The congratulations of the Council were conveyed to members and others on whom H.M. The Queen had conferred Honours in the New Year List, as published in the January JOURNAL.

3. **R.I.B.A. Award for Distinction in Town Planning.** The R.I.B.A. Award for Distinction in Town Planning was conferred upon Mr. Johnson Blackett [F] and Mr. Hugh Wilson, O.B.E. [A].

4. **Appointments.** (a) *Conference to consider foundation of a National Theatre Museum:* R.I.B.A. Representative. Richard Leacock [A]. (b) *The Museums Association:* R.I.B.A. Representatives on Standing Joint Committee. A. G. Sheppard Fidler [F] and J. B. Bickerdike [A]. (c) *Institute of Fuel: Organising Committee for Study of Domestic Heating in the United Kingdom:* R.I.B.A. Representative. George Fairweather [F]. (d) *Joint Committee on Materials and their Testing:* R.I.B.A. Representative. Professor W. N. Thomas [F]. (e) *R.I.B.A. Representative on B.S.I. Committees:* B/76 Thermo plastic flooring tiles and PLC/9 Plastic Tubing. A. P. Cooksey [A] in place of H. E. D. Adamson [A]. (f) *R.I.B.A. Architecture Bronze Medal. The York and East Yorkshire Architectural Society:* R.I.B.A. Representative to serve on Jury to consider the Award. Professor W. B. Edwards [F], President of the Northern Architectural Association.

5. **Christmas Holiday Lectures.** The President referred to the Christmas Holiday Lectures given early in January by Mr. William Allen [A] which had been attended by large audiences of interested young people and had proved a marked success. On his proposition a hearty vote of thanks was accorded to Mr. Allen.

6. **Amendments to Rules: The Nottingham, Derby & Lincoln Society of Architects.** Formal approval was given to amendments to the rules of the Nottingham, Derby and Lincoln Society of Architects which dealt with financial provision for branches and the filling of casual vacancies on branch executive committees.

7. **Standardisation of the Shape and Sizes of Trade and other Technical Publications.** The Council approved a recommendation of the Science Committee that manufacturers should be urged to consider the desirability of producing their trade and technical literature to the standard size specified in B.S.S. 1131: 1955. In order to give wide publicity to the advantage of this step it was agreed to publish an article on the subject by Mr. Gontran Goulden [A] in the R.I.B.A. JOURNAL and to make available copies of it to the architectural and advertising press. It was also agreed to draw the attention of the principal associations of advertising practitioners to the matter and to enlist the support of members in a campaign to bring to the attention of manufacturers the advantages of the British Standard.

8. **Delays in Securing Planning Approval.** The Council considered a report from the Town and Country Planning and Housing Committee on this subject. On their recommendation it was agreed to prepare a note for publication in the R.I.B.A. JOURNAL again drawing attention

to the advantage to be secured by consulting planning officers informally at an early stage in a project. It was agreed that where there was any doubt of the likelihood of approval, application should be made for approval in principle before proceeding with detailed designs. It was also agreed to make representations to the Ministry of Housing and Local Government on the importance of speeding up the procedure for securing various approvals by providing for the simultaneous consideration by the various bodies concerned of applications for planning consent.

9. **Membership.** The following members were elected: as Honorary Fellow 1, as Honorary Associates 2, as Fellows 59, as Associates 88, as Licentiates 26.

10. **Students.** 54 Probationers were elected as Students.

11. **Applications for Election.** Applications for election were approved as follows:—*Election 6 March 1956:* as Fellows 36, as Associates 260, as Licentiates 16. *Election 1 May 1956 (Overseas Candidates):* as Fellows 7 as Associates 14.

12. **Application for Reinstatement.** The following application was approved: as Licentiate: Ernest George Wilks.

13. **Resignations.** The following resignations were accepted with regret: George Brown Deas [F], Delamark Frank Ingleton [F], William Begg Simpson [F], Charles Christie Blackwell [A], Sylvester Joseph Trinity D'Souza Castellino [A], Miss Helen Kathleen Dean [A], John Neville Gunnis [A], Eric Wilder Hoyte

[A], Mrs. Jessie Ingoldsby [A], Mrs. Helen Marian Scrimgeour [A], Eric Jenour Stevenson [A], John Adams Webb [A], Edward Hallett Bucknole [L], Douglas Willman Cooper [L], John Richard Crowther [L], Walter Ernest Inions [L], George Francis Irwin [L], Thomas Edward Jeffery [L], Robert Taylor Kaye [L], Aubrey George Taylor [L], John Clifford Williams [Retd. L].

14. **Applications for Transfer to Retired Members' Class under Bye-law 15.** The following applications were approved: as Retired Fellows:—Thomas Brammall Daniel, Cecil Horace Hignett, William Murthwait How, John Steel, Basil Hope Sutton. As Retired Associates: Francis Moorhouse Dean, Colin White Kennedy. As Retired Licentiates: David Morton Brown, Fred Field, Edwin Spencer Hartley, Alexander Stewart Kinnear.

15. **Obituary.** The Secretary reported with regret the death of the following members: The Most Rev. and Right Hon. Cyril Foster Garbett, G.C.V.O., D.D., The Archbishop of York [Hon. F], Sir Arthur Trueman, K.B.E., D.Sc., F.R.S. [Hon. A], Manuel Nunes Castello [F], Percy Allport Oakley [F], Rupert John Gordon O'Donoghue [F], Rees Phillips [F], Edward Hamilton Bloomfield [A], Lindsay Cramp Dawkins [A], George Flett [A], Charles Roy Fowkes [A], Grahame Otto Hauser [A], Harold Percy Reynolds Atchison [Retd. A], Aneurin Foulkes-Jones [L], Henry Jennings [L], James William Mayhew [L], Dudley Nisbett, D.S.O., M.C. [L], Lieut.-Colonel Francis Griffith John Place [L], Sidney Richard Smith [L].

By resolution of the Council the sympathy and condolences of the Royal Institute have been conveyed to their relatives.

Members' Column

This column is reserved for notices of changes of address, partnership and partnerships vacant or wanted, practices for sale or wanted, office accommodation, and personal notices other than of posts wanted as salaried assistants for which the Institute's Employment Register is maintained.

APPOINTMENTS

Mr. Dennis W. Bell [A] has been appointed Chief Assistant Architect in the Borough Engineer's Department, Town Hall, Scarborough.

Mr. Alan Chambers [A] has resigned his appointment with the Lagos Executive Development Board, Lagos, Nigeria, and has been appointed Senior Architect and Office Manager at the Lagos office of Messrs. Nickson and Borys, Architects and Town Planners, 14-16 Porto Novo Market Street, P.M.B. 2170, Lagos, and will be pleased to receive trade catalogues.

Mr. John F. N. Collins [A] has taken up an appointment with the Coventry Corporation and his address is now 189 Sir Henry Parkes Road, Canley, Coventry.

Miss Kathleen Gibbons [A] has been appointed Architect to Messrs. Gibbons Brothers Ltd., Lenches Bridge Works, Pensnett, Brierley Hill, Staffs, and will be pleased to receive trade catalogues.

Mr. Alan Ingram [A] has been appointed Architect to the Irving Oil Company, Head Office, 71 Dock Street, Saint John, New Brunswick, Canada, where he will be pleased to receive correspondence and trade catalogues of manufacturers dealing in Canada.

Mr. Benjamin Prince [A] has been appointed Assistant City Planner to the City of Toronto Planning Board at 414 Bay Street, Toronto, Ontario, Canada.

Mr. Edward Williamson [A] has been appointed Architect to the Kumasi College of Technology, Kumasi, Gold Coast, where he will be pleased to receive trade catalogues, etc.

PRACTICES AND PARTNERSHIPS

Mr. H. Edgar Bell [A] has relinquished his appointment with the East Suffolk County Council, and has entered into private practice at 6 Goyfield Avenue, Felixstowe, Suffolk, where he will be pleased to receive trade catalogues, etc.

Mr. Kenneth Broadhurst [A] has relinquished his appointment with the State Housing Commission of Western Australia and begun private practice at 135 St. George's Terrace, Perth, Western Australia.

Messrs. Haydn M. R. Burgess, F.R.I.C.S. [A], and H. W. David Burgess [A], at present practising at 30 Mill Street, Pontypriid, have taken into partnership Miss Rae Ballard Evans [A] and a branch office has been opened at 51 The Parade, Cardiff (Cardiff 33802), from which the practice is being carried on as David Burgess and Rae Evans.

Mr. George Englesmith [A] has resigned his position at John B. Parkin Associates and is now retained in private practice by Toronto Industrial Leaseholds Ltd. as Consultant Architect and Industrial Designer. His private office is at 32 Summerhill Gardens, Toronto 7, with other office at 33 Bloor Street E., Toronto 5.

Mr. Norman Jones [F] has retired from the private practice of Norman Jones, Sons and

Rigby at 271 Lord Street, Southport, and the practice will be carried on under the same title by Mr. L. Rigby [F], Mr. C. A. Jones [A] and Mr. S. C. Jones [A].

Mr. Ian Stewart Kaye [A] has taken into partnership **Mr. Stanley Poole, D.F.M. [A]**, and the firm, formerly known as Stewart Kaye and Partners, will now practise under the title of **Stewart Kaye and Poole** at 14 Hill Street, Edinburgh, 2.

Mr. H. W. Kelham [A] has taken into partnership **Mr. Stephen Hart [A]**, and will continue to practise at 31 Broad Street, Stamford.

Mr. Michael D. Little [A] has commenced practice at 17 College Place, Southampton, Hants, where he will be pleased to receive trade catalogues, etc. (Southampton 25720).

Mr. Ian A. Mackenzie [A] has begun practice at The Office, Holborn, Dingwall, Ross-shire, where he will be pleased to receive trade catalogues, etc.

Messrs. Warren Neil and Elder [F/A], Stonebow, Lincoln, have opened an additional office at 108 York Road, West Hartlepool, under the direction of **Mr. A. J. Elder [A]** who will be pleased to receive trade catalogues, etc.

Mr. Kenneth Newton [A] has dissolved partnership with H. Hankinson and Co. and is now practising on his own account at Barclays Bank Chambers, 3 The Downs, Altrincham, where he will be pleased to receive trade catalogues, etc. (Altrincham 2172).

The firm of **Searle and Searle [F/A]** have taken into the partnership **Mr. John C. Hamilton Odum [A]**. **Mr. Norman O. Searle [A]**, who recently retired from active partnership, has become Consultant to the firm.

The former partnership of **Seaton & Cull** has been terminated by mutual consent. **Mr. W. G. Seaton [A]** will continue to practise under his own name from Central House, Lansdowne, Bournemouth. **Mr. D. A. Cull [A]** is taking up an appointment as Assistant Architect to the Canadian Government. His address will be Public Works Department, Garland Building, 146 Queens Street, Ottawa, Canada. He will be pleased to receive trade catalogues, etc.

Mr. Herbert Spink [F] has retired from the partnership of Messrs. Edgington, Spink and Hyne, 52 High Street, Windsor. The practice will be continued by **Mr. H. Reginald Hyne [A]** as sole principal, the firm's name and address remaining unchanged.

Miss Pamela Stillman (Mrs. John Warner) [A] has begun practice at 140 Chichester Road, Bognor Regis, Sussex, and will be pleased to receive trade catalogues, samples, etc. (Bognor Regis 3292).

Mr. Neil Thompson [A] is now in private practice at 45a, Sloane Avenue, S.W.3, where he will be pleased to receive trade catalogues, etc. (KENSington 9756).

Mr. Leonard W. Tracey [A] and **Mr. J. W. O. Harrison [A]** have taken into partnership **Mr. T. J. Coton [A]**. The firm will continue to practise under the style of E. G. Harrison and Tracey, at County Chambers, Corporation Street, Birmingham, 2.

CHANGES OF ADDRESS

Mr. Brian Annable [A] has changed his address to 28 Sunny Grove, New Cotessey, Norwich.

Mr. C. J. Bailey [A] announces that his permanent address is now 36 Wordsworth Avenue, Penarth, Glam.

Mr. D. B. Buchanan [A] has moved his private address to 175 Harvard Avenue, Winnipeg 9, Manitoba, Canada.

Mr. Ian T. M. Davis [A] has moved his address to 12a Crescent Road, Crouch End, London, N.8 (MOUntview 2037).

Mr. Charles G. Dean [A] has changed his address to c/o Messrs. Jennings and Gill [L/A], Market Place, Ambleside, Westmorland.

Mr. C. W. T. Evans [A] has moved his office to Wolvesey Palace, Winchester, where he will be pleased to receive trade catalogues, etc.

The office of **Mr. H. Hubbard Ford [F]** has been moved to 35 South Audley Street, London, W.1 (GROsvenor 6208/9).

Mr. William J. Gilmour [A] has moved his office to 235 Bath Street, Glasgow, C.2. The telephone number remains unchanged (CENTral 1545).

Mr. L. E. G. Hunt [F] has moved his branch office at Thetford to 1 Minstergate, Thetford (Thetford 2212).

The offices of **Bridge and Kennedy [L]** have been moved to 20 Eccleston Street, London, S.W.1 (SLOane 7603).

Mr. Reginald Kirby [A] has changed his address to 1 Borough Lane, Saffron Walden, Essex (Saffron Walden 3172).

Mr. Victor C. Launder [A] has changed his address to 'Marina', Spencer Road, Ryde, Isle of Wight (Ryde 3804).

Mr. Lockart Fraser Miller [L] has changed his business address to 49 Bridge Street, Dollar, Clackmannanshire.

The present address of **Mr. Robert Faulkner Mitchell [A]** is 30 Grafton Road, Roseneath, Wellington, New Zealand.

Mr. Thomas E. Scott, C.B.E. [F] and **Mr. Edward E. Barlow [F]** have moved their office to 10 Gray's Inn Square, London, W.C.1 (CHAncery 5439).

Mr. Douglas H. Smith [A] has moved his address to 2 Byway Road, Leicester.

Mr. Julian Tayler [A] has moved his address to 11 Ferrers Close, Tile Hill, Coventry.

Mr. J. A. Wells-Thorp [A] has moved his address to 17 Withean Court, London Road, Brighton 6, Sussex.

PRACTICES AND PARTNERSHIPS WANTED AND AVAILABLE

Associate (35), A.A. Dipl., good all-round experience, car owner, seeks partnership or position leading thereto within a short period with an established firm in or near London, though all other parts considered. Some capital available. Box 12, c/o Secretary, R.I.B.A.

Ex Borough Architect, lifetime's experience, would like to consider partnership in London or provinces. Limited capital available. Box 13, c/o Secretary, R.I.B.A.

Member with own practice but desirous of extending activities wishes to acquire another good practice preferably in London, or alternatively in the Southern Counties. Willing to consider amalgamation, take over by degrees or outright purchase. All necessary capital available and negotiations with Principals only in strictest confidence. Box 14, c/o Secretary, R.I.B.A.

Fellow, recently returned from abroad, seeks partnership in established practice or position leading thereto. Capital available. Box 16, c/o Secretary, R.I.B.A.

Associate (38) with wide experience seeks partnership north-west area. Some capital available. Box 17, c/o Secretary, R.I.B.A.

Associate with varied experience in London area seeks partnership or position leading thereto in that area. Capital available. Box 18, c/o Secretary, R.I.B.A.

Principal leaving country wishes to dispose of practice complete with fully equipped office, good staff, with work in progress and in sketch plan stage. Any reasonable offer would not be refused. Modern house available if required. Reply in confidence, Box 101, c/o Secretary, R.I.B.A.

WANTED AND FOR SALE

Mr. Harold B. Rowe [F], City Architect of Exeter, 2 Southernhay West, Exeter, is revising his Catalogue of Building Products and will be pleased to receive current trade literature and technical booklets.

Professor **W. B. Edwards [F]** announces that the School of Architecture (University of Durham, King's College, Newcastle upon Tyne) is expanding its library of manufacturers' technical data and samples of building materials. Firms are invited to submit literature and samples.

For sale. R.I.B.A. JOURNAL (buckram bound) for 1947, 1949, 1951, 1952. Price 12s. 6d. per vol., including postage. ARCHITECTURAL REVIEW (green buckram bound) for 1949, 1950, 1951, 1952, 1953. Price £3 per vol., excluding postage. Box 8, c/o Secretary, R.I.B.A.

For sale. Double-elephant steel plan chest, 8 drawers, in 2 sections. Box 10, c/o Secretary, R.I.B.A.

ACCOMMODATION

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